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# A NEED ASSESSMENT OF DAY SURGERY SERVICES IN ALBERTA

by

© MICHAEL CIVITELLA

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF HEALTH SERVICES ADMINISTRATION

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Supervisor

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Date July 14, 1982

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## ABSTRACT

An emerging trend in the delivery of health services is the use of more ambulatory care, and particular attention has been given to the increasing use of day surgery (DS) as an alternative to hospital inpatient surgical services. Cognizant to this and the apparent inadequate mixture among the various modes of delivering surgical services in Alberta (i.e., office, day surgery, and hospital inpatient surgical services), this study was undertaken. A conceptual framework for differentiating surgical services and a model for identifying and estimating the need for the service were developed. While data limitations precluded the analysis of the entire spectrum of surgical services, three methods were developed to estimate the proportion of surgical cases which are served on an inpatient mode but could have been operated on an ambulatory basis.

One method is based on the examination of hospital surgical cases tabulated according to the length of stay (LOS). On the assumption that the short LOS cases could be served on a DS unit, the number of surgical cases with LOS less than or equal to two or three days were used as an approximate range in estimating potential DS services. The second approach employs the use of physicians' opinions regarding what the "need" for DS ought to be under ideal conditions. To this end a survey on Alberta physicians was conducted. Day surgery profiles (DSP) were obtained for a variety of operation categories, and the application of the

DSP to hospital surgical utilization data constituted the methodological basis. The third approach uses surgical utilization rates from British Columbia in an attempt to measure the future "need" for DS services in Alberta.

A key finding of this study is that there is substantial room for the expansion of DS services in Alberta which could potentially reduce the number of inpatient surgical cases and beds or it could indirectly increase bed availability for more seriously ill patients without expanding inpatient facilities. The assessment of need using physicians' opinions suggests that between 26,000 and 53,000 surgical cases per year could potentially have been done on a day surgery basis. In view of this, it is estimated that between 100 and 300 hospital surgical inpatient beds could potentially be freed for other services. Reasonably similar results were obtained from the other two methods.

This study also solicited physicians' general opinions towards the various issues associated with the concept and future development of DS services. A hospital survey was also included to gather some exploratory information regarding the present status of DS services in Alberta. During the last five years, there has been an expansion of day surgery services in Alberta; however, due to the inconsistent methods of reporting day surgery and the lack of appropriate information systems, it is difficult to accurately assess the magnitude of this growth.

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# CHAPTER 1

## INTRODUCTION

The aim of a health care system is to provide efficiently quality health care to the population served. The Canadian health care system has for many years promoted the use of hospital inpatient services, significantly contributing to the increase in health care costs. In the last decade, some governments, health care providers, and researchers have frequently proposed to contain cost by changing the mix of service available. One area which has recently drawn much attention is day surgery services. Some policy makers, planners, researchers, or providers of health services believe that day surgery can be an alternative to costly inpatient care for both adults and children. It has been claimed that day surgery has the potential to improve the quality of care, to facilitate access to surgical services, and to reduce or contain the costs of delivering health services.

In recent years, in both Europe and North America, there has been an increase in the amount of day surgery performed in hospitals; however, it appears that the level of day surgery services performed in hospitals varies greatly. These differences can be accounted for by several factors. For example, it is generally agreed that, under the publicly supported medical insurance schemes, the utilization of health services is strongly influenced by the

supply of services. In the context of the day surgery programs, utilization patterns are largely determined by the availability of physical facilities for the program, that is, the supply of day surgery beds appears to have a strong relationship with the utilization level.

The types of surgical procedures performed on a day visit basis also seem to vary substantially among hospitals. This variation may be attributed to various factors such as the state of medical technology, different opinions and attitudes among the professionals as to which procedures are appropriate for day surgery, the distribution of general practitioners and specialists, and the availability of day surgery services.

## 1.1 OBJECTIVES

The aim of this study is to assess the "need" of day surgery services in Alberta by estimating the proportion of hospital inpatient sungical cases which can be performed on a day basis. More specifically, this study will pursue the following objectives:

1. To review the current status of day surgery services in Alberta;
2. To measure the general attitudes and opinions of Alberta physicians towards the concept of day surgery;
3. To estimate the proportion of surgical cases which could

be performed on a day surgery basis; and

4. To review past surgical procedures done on an inpatient basis and to estimate potential patient-days or acute hospital beds which could have been saved if day surgery services were fully available.

## 1.2 SIGNIFICANCE

Inpatient care costs in acute care hospitals is a major component of increasing health care costs, forcing provincial governments to search for more economical alternatives. The challenge faced by the governments and health care professionals is to provide needed surgery services to the public in the most efficient and effective manner, without compromising the quality of care.

Although there are some controversies regarding day surgery services, in general terms, it would be safe to say that day surgery is here to stay, and in the long run, has a potential for substantial growth and savings in health care costs by reducing the direct costs of care for surgical patients and/or by indirectly preventing the future expansion of inpatient facilities. It is believed that the present organization of health services, particularly hospital services, does not allow the potential savings to materialize. It seems entirely rational to advocate day surgery as an economical mode of health care delivery by which the demand for hospitalization of low risk patients

undergoing minor surgical procedures could be eliminated or reduced substantially. Acute inhospital care services are an essential component of a health care system, yet they are not only costly but also inappropiate for meeting some of the service needs of the population served. Accordingly, the provision of acute inhospital care facilities should be planned within the context of the total health care system, that is, in conjunction with other health care facilities such as long term care facilities and ambulatory care programs including day surgery. From the health care system perspective, the construction of additional acute care facilities will not necessarily provide the most economical and comprehensive health services to meet the needs of all clients in the system. Historically, however, the Canadian health care system has had built-in incentives for the construction and utilization of more acute care beds, and there has been strong pressures from the medical profession for such beds. This is in spite of the fact that the bed per capita ratio is relatively high.

One of the primary goals of any health care system is to provide the public with the most appropriate service at the right place and time within the resource constraints put on the system. In this regard, a systems approach to health planning is necessary to assure optimum resource allocation. Enlargement of one sub-system at the expense of others or the achievement of efficiency in one part of the system will not necessarily accomplish the goals of the total system

(Churchman, 1968). Therefore an attempt should be made to achieve an optimum mixture among the numerous modalities for the delivery of health care services rather than merely providing more acute care beds (Kohn & White, 1976).

In this study the type and quantity of surgical procedures that could be done on a day visit basis in Alberta will be investigated. This investigation may provide health planners with information which is necessary to project the amount of resources required to further develop day surgery services and the future need for inpatient surgical beds in Alberta.

## 1.3 DEFINITIONS

The following is a list of definitions of terms which are referred to throughout the thesis:

Day Surgery(DS) - The performance of surgical operations on an ambulatory basis without the necessity for inpatient beds and with admittance and discharge occurring on the same day. This definition excludes those minor cases which could be routinely performed in a physician's office.

Day Surgery Profile(DSP) - The estimated proportion of hospital inpatient surgical cases, for a given operation, which could potentially be carried out on a day visit basis.

Estimated Proportions(EP) - The physicians' estimated minumum and/or maximum proportion of hospital inpatient surgical cases, for a given operation, which could

potentially be carried out on a day visit basis.

Day Surgery Load(DSL) - The total number of hospital inpatient surgical cases per year which could be classified as day surgery candidates.

Patient Days(PDAY) - The total number of days spent by hospital inpatients during a specific time frame (usually one year period).

Patient Days Saved(PDS) - The total number of PDAY which could potentially be saved if a specified number of hospital inpatients were treated on a day surgery basis.

Length of Stay(LOS) - The number of days spent in the hospital by inpatients who left the hospital (alive and/or dead) during a specified time frame.

Average Length of Stay(ALOS) - The average number of days spent in a hospital by inpatients discharged or expired during a specified time frame.

Separations - The number of inpatients who were discharged or expired in a hospital during a specified time frame.

## 1.4 SCOPE AND LIMITATIONS OF THE STUDY

### 1.4.1 SCOPE OF THE STUDY

The present study is of a descriptive nature based on past surgical utilization data and the results of physician and hospital surveys. As a result, patients' or clients' opinions are not measured in this study, and no attempts

were made to use the expert panel approach such as policy Delphi. No attempt was made to develop or validate the behavioral theory related to the use of surgical services.

### 1.4.2 LIMITATIONS

The following limitations were encountered by the author:

1. There is a lack of theory related to the utilization of day surgery services from both the patient's and physician's standpoints.
2. In this study, the author had to rely on utilization data collected for other purposes and on mail survey questionnaires due to limited resources and time.
3. This study is a descriptive one; it did not involve hypothesis testing or theorization.

## 1.5 FORMAT

A review of pertinent literature is provided in Chapter 2. Chapter 3 presents the methodology utilized in this study and Chapter 4 presents the results and interpretations of the findings. This will be followed by the summaries, findings, conclusions, and recommendations in Chapter 5.

# CHAPTER 2

# LITERATURE REVIEW

## 2.1 PURPOSE

The purpose of this chapter is to review the pertinent literature related to day surgery. The contributions of day surgery services to the health care delivery system and the further developments which need to occur in the domain of day surgery are presented from an historical perspective. Areas discussed in this chapter include: (a) the concept and development of day surgery, (b) the implications of establishing day surgery programs, and (c) a selected review of methodologies which can be applied to assess the need for day surgery services.

## 2.2 THE CONCEPT AND DEVELOPMENT OF DAY SURGERY

### 2.2.1 DEFINITION OF DAY SURGERY

The literature indicates that the term day surgery has various synonyms. Some of the most recurrent terms associated with day surgery are day care, day case, day visit, outpatient, ambulatory, and short-stay surgery. Lacny (1975) defines the term as

> the performance of surgical operations on an ambulatory basis without the necessity for inpatient beds and with admittance and discharge occurring on the same day. (p. 7)

This definition distinguishes day surgery cases from

inpatient surgery but ignores the other end of the spectrum which distinguishes physician office type surgery from day surgery. It is obvious that the term should not include minor surgical cases which are routinely carried out in a doctor's office (O'Donovan, 1976; Cohen, Keneally, Black, Gaffney, & Johnson, 1980). Such cases require only a minimal amount of care and facilities. Day surgery implies the necessity, in most situations, for anaesthesia whether it is applied locally, regionally, or generally (Goran & Donaldson, 1976). Usually, the procedures are carried out on very low risk patients and involve simple operations that are short in duration (Shah & Robinson, 1977).

When a day surgery program is fully developed, it should consist of a pre-admission workup and organized post-operational care, such as home care services or other ambulatory services (i.e. 24 hour telephone followup system, or patient education programs) (Minister of National Health and Welfare, 1978). In some hospitals, a day surgery program consists of a unit which is referred to as the 24-hour day surgery program. For example, at the Victoria General Hospital in British Columbia, the patients usually undergo surgery on the day they arrive and they stay overnight in the ambulatory care unit. With this approach, it is claimed that the majority of hernia operations have been done on an outpatient basis (Ambulatory Surgery Expanding, 1978).

Day surgery programs may also include medical and diagnostic services where the procedures require the patient

to be anaesthetized or sedated (Rowland, 1976). The Minister of National Health and Welfare (1978) established a list of broad categories to provide guidelines in determining what procedures are appropriate for day surgery. This was revised and approved by the Board of the Alberta Medical Association to provide guidelines for Alberta hospitals (Minister of National Health and Welfare, 1978).

It is evident that there have been some difficulties in defining the boundaries of day surgery procedures. Basically this is a classification problem which is not unique to day surgery services; that is, a problem of this type is inherent in the nature of the practice of medicine itself. Medicine is by no means an exact science and classification systems in the health field have to deal with difficulties associated with fuzzy boundaries (e.g. Bay, Leatt, & Stinson, 1980). For this reason, neither the classification procedures for day surgery cases can be completely prescribed nor can the subjective judgement of physicians be avoided. Moreover, because definitions for classifications are usually derived through the process of group work, some generalities and vague definitions which are inherent in the process of group work may develop (Middlebrook, 1974). One must also recognize that physicians' information about medical science in general and the status of each patient under their care in particular, is not always perfect. Since physicians' expertise and value systems also vary (Freidson & Lorber, 1977), it is inevitable that they interpret and

make clinical decisions with some variation. It follows, therefore, that the delivery mode and pattern of day surgery programs will vary substantially among the hospitals and regional or provincial jurisdictions.

### 2.2.2 HISTORICAL DEVELOPMENT OF DAY SURGERY

According to early medical literature, it appears that the concept of day surgery originated in the United Kingdom. It is interesting to note that earlier authors frequently commented on pediatric cases. For example, Cohen, Keneally, Black, Gaffney and Johnson (1980) reported that documentation, generated between 1880 and 1905 at the Royal Alexandra Hospital for Children in Sydney, Australia, revealed cases which were performed on an outpatient basis involving the removal of tonsils and adenoids. At the Royal Hospital for Sick Children in Glasgow, Scotland, outpatient operations were also performed on children (Nicoll, 1909). In that hospital, numerous pediatric surgical procedures, such as inguinal herniotomies or cleft lip palate operations, were performed on an outpatient basis. In spite of the fact that the early investigators demonstrated the apparent absence of unfavorable effects due to early discharge of patients or surgery performed on an outpatient basis, enhancement of the concept did not follow. From the turn of this century to the end of World War II, there appears to be few, if any, reported studies on surgical procedures performed on a day visit basis. However, the lack

of documented day surgery cases does not necessarily mean that all surgery cases were done on an inhospital basis. It is very likely that in the early part of the 1900's, many operations could have been performed at the patient's home or at the physician's office. One must recall that hospitals were a medieval development and were viewed by society as a means of providing shelter for the traveller, the sick poor, the orphan, and others whose families could not care for them (Freidson & Lorber, 1977). The crowded and unsanitary conditions and high mortality rates which were reported in hospitals deterred many people from using hospital facilities. Society's view towards the role of the hospital did not change quickly. A shift in attitude was noticeable during the 1940's, when hospitals were viewed less as charitable institutions (Rakick & Darr, 1978). Also, in these days, it seems that physicians regarded the practice of early "ambulation" as contrary to the generally accepted therapeutic importance placed on "rest" after surgical procedures in a hospital (Simpson, 1976).

After World War II, a more systematic exploration and evaluation of day surgery was undertaken by various investigators (Oosterlee & Dudley, 1979). These investigators provided some evidence that early ambulation could be clinically beneficial for certain patients. It is difficult, however, to assess how this regeneration of information on early ambulation contributed to the steady increase in acceptance of day surgery.

According to O'Donovan (1976), as early as 1946, Leithauser argued that a prolonged period of inactivity and bed rest had negative effects on the patient's surgical recovery. As cited by O'Donovan (1976), this standpoint appeared to have enhanced the development of the concept of early post-operative discharge. In a book entitled Early Ambulation and Related Procedures in Surgical Management, published in 1946, Leithauser purportedly gave a summary of his experience with early ambulation (O'Donovan, 1976). For example, the average length of stay(ALOS) reported for both interval and acute appendectomy were 1.9 and 2.2 days respectively. In 1953, Farquharson in Edinburgh, Scotland, reported that 485 inguinal herniorrhaphies were performed under local anaethetic. He contended that the development of a sound day surgery policy would have potential benefit for the thousands of people on the waiting list throughout the United Kingdom (Oosterlee & Dudley, 1979; O'Donovan, 1976).

Evidently, in the last two decades, there has been a substantial increase in the number of minor surgical procedures done on a day surgery basis in both Europe and North America. The extension of day surgery to relatively major operations has been, however, a more recent phenomenon (Oosterlee & Dudley, 1979; Steward, 1980). A major contributing factor for this trend has been the development of new anaesthetics and anaesthetic techniques which have made day surgery safer and more acceptable to physicians (O'Donovan, 1976).

The magnitude of day surgery operations in Great Britain suggests that the concept has been widely accepted by the medical profession and the public. For example, it has been reported that, in 1977, 536,893 operations were performed on a day surgery basis, mostly in the specialities of urology, gynecology, orthopaedics, and general surgery (Ogg, 1980). Also, the growth of day surgery programs in Britain, however, did materialize without the benefit of an over-all plan for day surgery services.

### 2.2.3 UNITED STATES EXPERIENCE

The inception of outpatient surgical services in the United States appears to have occurred early in this century. For example, it was reported that Waters established an anesthesia clinic in Sioux City, Iowa, in 1919 and a free standing outpatient surgical facility in Kansas City in 1923 (Marks, Greenlick, Hurtado, Johnson, & Henderson, 1980). However, Otherson and Clatworthy (1968) pointed out that American surgeons displayed a degree of resistance toward the concept of day surgery. The lack of empirical evidence to substantiate the advantages of day surgery services seemed to be a contributing factor to the apparent resistance. According to O'Donovan (1976), it was only in the 1960's that day surgery seemed to develop rapidly in the United States. In 1968, Providence, Rhode Island, became the location of the first free-standing surgical centre (usually referred to as surgicenters) in the

United States (O'Donovan, 1976).

Surgicenters are usually privately owned. More recently, the concept of surgicenters has become very popular in the United States and it appears that the number has been steadily increasing (Burns, 1979). However, the vast majority of day surgery programs have been hospital based. For example, in 1974, about 2,600 hospitals out of a total of 7,000, in the United States, had some form of a day surgery service (Marks et al., 1980).

In 1980, the American Hospital Association's Division of Ambulatory Care conducted a survey to determine the extent to which hospitals were involved with day surgery (Burns & Ferber, 1981). The sample included 2,955 nonfederal hospitals in the 134 largest United States Standard Metropolitan Statistical Areas (SMSA's): 2,137 (72%) hospitals responded to the survey. Burns and Ferber (1981) reported that 1,506 (70%) of the responding hospitals had some form of day surgery services. Furthermore, 812 (38%) hospitals indicated that they had an organized day surgery program.

### 2.2.4 THE CANADIAN EXPERIENCE

A few early reports provide some evidence to indicate that day surgery was practiced in the early part of this century in Canada. For example, it has been documented that the Toronto Sick Children's Hospital provided some day surgery services as early as 1910 (Shah, 1980). During the

period 1914-1919, of the 15,507 operations which were conducted at the hospital, 14,576 (83.1%) were done on a day surgery basis. Seventy-eight percent of the day surgery procedures were tonsilectomies. This high rate of day surgery procedures in hospitals may have been a result of the charity role of the hospital which attracted many patients who could not afford treatment at home by a private physician.

Shah (1980) lists several factors which might have influenced the development of day surgery in Canada. The establishment of a universal government sponsored hospital insurance plan promoted a shift to inhospital care, and, thus, provided a disincentive for the growth of day surgery programs. Both the National Health Grant Act of 1948, which funded the construction of hospital facilities, and the Hospital Insurance and Diagnostic Service Act of 1957, which provided the basis for reimbursement of hospital costs to the provinces, enhanced the development of hospital inpatient facilities in Canada. Furthermore during this period, allocations for hospital funds were entirely based on patient days generated. One of the effects of this funding method was to promote the utilization of hospital inpatient facilities.

The Task Force on the Cost of Health Services in Canada (1970) recommended an increased use of day surgery as a means of providing an alternative to hospital inpatient care, which was then considered to be a leading cause of the

rising costs in the health care industry. Furthermore, it appears that that the Federal Government's Established Program Financing Act (EPF) of 1977 provided the provinces with the incentive to develop alternatives to hospitalization, such as day surgery programs. To supplement the effects of the EPF act, global budgeting techniques were also introduced by the provincial hospital authorities for financing hospital operations, where funding was no longer based on the number of patient days generated.

Presently, day surgery programs in most provinces are financed from the hospital's global budget. The provinces of British Columbia, Ontario, and Newfoundland finance day surgery programs with reimbursement schedules. Currently, none of the provinces support independently operated day surgery centers which are not part of a hospital (Shah, 1980).

Similar to the situation in Europe, the growth of day surgery programs in Canada has been on an ad hoc basis, without any systematic planning and/or policy guidelines. It was only in 1968 that both the provinces of British Columbia and Quebec developed plans for day surgery programs on province-wide bases (Shah, 1980). Table 1 illustrates the inpatient and day surgery rates for each province in Canada in 1976.

It must be noted that inter or intra-provincial comparisons for day surgery rates are difficult due to the lack of a standardized method for compiling day surgery

TABLE 1

Surgical Services in Canada
1976

| Province | Population (000) | Number of Day Surgery Programs | Surgical Rates per 1000 | |
|---|---|---|---|---|
| | | | Day Surgery Visits[1] | Inpatient Separations[2] |
| British Columbia | 2,466.6 | 83 | 27.3 | 80.2 |
| Alberta | 1,838.0 | 30 | 11.3 | 120.6 |
| Saskatchewan | 921.3 | 11 | 20.6 | 76.0 |
| Manitoba | 1,021.5 | 38 | 86.8 | 74.7 |
| Ontario | 8,264.5 | 118 | 28.4 | 85.6 |
| Quebec | 6,234.4 | 58 | 34.5 | 70.1 |
| New Brunswick | 677.2 | 12 | 29.1 | 81.2 |
| Nova Scotia | 828.6 | 23 | 22.5 | 77.0 |
| Prince Edward Island | 118.2 | 5 | 11.2 | 77.4 |
| Newfoundland | 567.7 | 5 | 10.8 | 67.2 |
| CANADA | 22,992.6 | 385 | 30.1 | 81.6 |

[1]From Hospital Annual Statistics, 1976, Catalogue, 83-232 Annual

[2]From Surgical Procedures and Treatments, 1976, Catalogue, 82-208 Annual

statistics. In Alberta, for example, some hospitals report day surgery cases as inpatient procedures, while other hospitals report day surgery cases as outpatient procedures (Harbwick, 1979). This suggests that the day surgery rates reported in Table 1 for Alberta is an under-estimation. Moreover, the above also leads one to question the reliability of the data from other provinces presented in Table 1.

### 2.2.5 THE BRITISH COLUMBIA EXPERIENCE

The experience of British Columbia with day surgery has been recently reported. Shah's (1980) study, based on an analysis of data obtained from the British Columbia government, provides an indication of the future growth potential for day surgery in other provinces. Table 2 provides a summary of ten years' experience in British Columbia. It should be noted that the figures for the years 1968 to 1976 were underestimations since they included only the insured cases, whereas the 1977 total includes both insured and non-insured cases. The number of day surgery cases increased from 13,450 (1968) to 76,180 (1977) which constituted 7.4% and 27.7% respectively of all operations performed by British Columbia hospitals either on an inpatient or outpatient basis. On a per 1,000 persons basis, the increase was from 6.7 to 30.5. It may be concluded, therefore, that the utilization of day surgery services in British Columbia has increased substantially during the last

TABLE 2

Day Surgery[1] and Inpatient Operations in British Columbia
1968 - 1977

| Year | All Operations | | Day Surgical Load | | |
|---|---|---|---|---|---|
| | No. of Operations (000) | Rate per 1000 Persons | No. of Operations (000) | % of all Operations | Rate per 1000 Persons |
| 1968 | 180.8 | 90.0 | 13.5 | 7.4 | 7.7 |
| 1969 | 188.2 | 91.0 | 21.5 | 11.4 | 10.4 |
| 1970 | 209.9 | 98.2 | 32.2 | 15.3 | 15.1 |
| 1971 | 223.0 | 102.0 | 39.6 | 17.7 | 18.1 |
| 1972 | 230.4 | 102.5 | 44.1 | 19.1 | 19.6 |
| 1973 | 239.2 | 103.3 | 49.8 | 20.8 | 21.5 |
| 1974 | 250.3 | 104.5 | 55.3 | 22.1 | 23.1 |
| 1975 | 255.0 | 103.8 | 61.0 | 23.9 | 24.8 |
| 1976 | 258.8 | 104.9 | 65.7 | 25.4 | 26.6 |
| 1977 | 275.2 | 110.1 | 76.2 | 27.7 | 30.5 |

[1]Source: Shah, C.P. Day-Care Surgery in Canada, Evolution, Policy and Experience of Provinces. The Canadian Anaesthetists Society Journal, 1980, 27, 399-406.

decade.

### 2.2.6 THE ALBERTA EXPERIENCE

The first formal day surgery program in Alberta was established in 1969 at the Foothills Provincial General Hospital in Calgary (Lacny, 1975). By the year 1971, the Foothills Hospital had expanded its day surgery facilities from 15 to its present total of 37 beds. During the years 1972 to 1980, the volume of day surgery at the Foothills Hospital increased from 5,970 to 9,561 cases per year (Harrison, 1981). In terms of the average number of cases per day, the increase was from 24 to 32 for a five day week.

In 1972 the Holy Cross Hospital began a four bed day surgery unit which performed 872 surgical procedures in the first year of operation. In the year 1974, 2,254 procedures were performed, accounting for approximately 22% of the total surgical workload (O'Donovan, 1976). Since then, other hospitals in Alberta have also established day surgery programs.

In 1974, a total number of 5,518 surgical procedures were reported as being performed on a day surgery basis in Alberta hospitals. This number represents the amount of day surgery cases reported by the Foothills hospital only. (see Appendix A). By the year 1976 the volume increased to 20,851 procedures; however, it is very likely that the actual volume of day surgery procedures in Alberta's hospitals exceeded this amount, considering the incomplete nature of

the data base from which such information was obtained. For example, the Holy Cross Hospital, which was performing day surgery at that time, (O'Donovan 1976) was not included in the list. In the fiscal year 1978-1979, 38 out of 124 public and federal general hospitals reported having a day surgery program (Alberta Hospitals and Medical Care, 1979). A total of 38,946 visits were reported as day surgery procedures that year. Table 3 tabulates the volume of day surgery utilization according to hospital size. Hospitals with 300 beds or more accounted for 52% of the total day surgery visits done in Alberta. However, the current status of day surgery in Alberta remains difficult to assess accurately due to the lack of a standardized data collection mechanism.

A day surgery program will be included in the future Walter C. Mackenzie Health Sciences Centre. It is presently anticipated that in 1983, a 40 bed day ward will become operational. The program will consist of four day surgery operating rooms, an endoscopy suite, and a cystoscopy suite. Furthermore, other new hospitals presently being planned in Alberta include day surgery programs.

Presently, there is no readily available information regarding the actual number of surgicenters and/or medicenters which exist in Alberta. An attempt should be made to determine whether these facilities are increasing and what amount and types of surgical procedures are being performed in them. The policy issues as to whether the government should be involved in setting standards,

TABLE 3

Day Surgery Programs in Alberta
1978 - 1979

| Hospital by Size (Beds) | Number of Hospitals | Number of Hospitals with Program | Total[1] Visits | % of Total Visits |
|---|---|---|---|---|
| 1 - 24 | 19 | 3 | 2,134 | 5.6 |
| 25 - 49 | 55 | 15 | 5,412 | 13.9 |
| 50 - 99 | 27 | 9 | 4,507 | 11.6 |
| 100 - 299 | 11 | 4 | 5,777 | 14.8 |
| 300+ | 8 | 5 | 20,130 | 51.7 |
| Other (Federal Hospitals) | 4 | 2 | 926 | 2.4 |
| TOTAL | 124 | 38 | 38,946 | 100 |

NOTES:

[1]Total number of surgical day surgery program visits to the surgical, emergency, day surgical, and other units.

Visit defined as one attendance of a patient for a continuous period of time during which operation(s), treatment(s), or examination(s) are performed.

Data taken from Hospital Care in Alberta, Statistical Supplement for the year ended March 31, 1979.

monitoring, and funding such facilities in the future will have to be resolved. Nevertheless, it appears that there is room for future growth in day surgery programs in Alberta. This growth, however, must be planned and the plan must be an integral part of an overall health care strategy for the province.

### 2.2.7 SURGICAL RATES AND LENGTH OF STAY

SURGICAL RATES

In Alberta, the number of separations involving surgery per 100,000 residents is the highest in the country (Statistics Canada, 1976). For example, in 1976 Alberta reported 12,062 separations involving surgery per 100,000 residents. The second highest rate was reported by Ontario with 8,563 separations per 100,000 residents. Alberta statistics also indicate that 59.8% of all separations involved surgery as compared with the Canadian national average of 51.8%. These statistics may support the suggestion that some surgical operations were done unnecessarily. The inconsistent reporting of both outpatient and inpatient surgery may also influence these rates; however, this is difficult to assess.

It has been noted that surgical incident rate has increased during the 1970's (Pauly, 1979). Whether or not one should be alarmed at an increase in the surgery rate or whether surgery is possibly a better alternative to nonsurgical forms of treatment are questions which still

need to be addressed (Civitella, 1981). A study about variations in surgical rates alone cannot answer the questions of necessary or unnecessary surgery, but excessively higher rates of surgery as compared with the experience of other large similar populations may suggest some cases may indeed be carried out unnecessarily if there is no obvious alternative explanation. Empirical evidence based on case studies in the U.S. suggests the possibility that some unnecessary surgery is indeed being performed (Mosteller, 1978). Differences in the number of hospital beds, the availability of physicians, the method of payment, the type of regulations, the type of criteria for performing surgical procedures, and physician's attitudes are some of the variables which have been attributed to the differences in surgical rates among regions (Civitella, 1981). In the last few years the concept of "unnecessary" surgery has been studied, but the difficulty in defining what constitutes "unnecessary" remains.

LENGTH OF STAY

It is proper and pertinent to examine the determinants of hospital length of stay (LOS) before examing how bed utilization by patients undergoing surgical procedures may be reduced. One must also be aware of the potential impact which the reduction or elimination of relatively minor cases will have on the management of hospitals. Presently, in Alberta, the average LOS for all separations involving surgery is above that for the national average (Statistics

Canada, 1976). Kohn and White's (1976) study mentioned that the LOS is a function of several factors such as the severity and complexity of the patient's problem and the availability of both ambulatory and inpatient resources. Physicians' attitudes also affect the LOS. Eastough (1980) indicated that the American physician had a conservative attitude about shortening the length of hospitalization.

One of the findings from Kohn and White's (1976) study was that the North American regions have experienced a shorter ALOS (including non-surgical cases) as compared to Europe. This appears at first to contradict Eastough's (1980) observations that the American physicians have a more conservative attitude against shortening the length of hospitalization. However, a closer examination of the report revealed that North American regions have a higher proportion of overnight hospital admissions included in the LOS statistics. One may, therefore, hypothesize that the shorter ALOS in North America was, at least in part, due to the larger volume of short stay admissions and not necessarily to the more liberal attitude of the American physicians in favor of shortening the length of hospitalization. In contrast, it appears that European countries are substituting short stay admissions by ambulatory care. Kohn and White (1976) suggest that countries with more diverse health care delivery programs including such services as ambulatory care, home visiting by physicians, or home care nursing services, tend to have a

lower proportion of short term inpatient hospital use. The rationale for this is that substitution for inpatient care takes place only when alternative services such as ambulatory or home care services are made available.

The examination of hospital stay may be subdivided into two phases: the pre-operative and post-operative phases. Studies investigating the LOS for surgical cases have usually focused either on the total LOS or the post-operative stay (McCorkle, 1970). In day surgery programs, both phases are dealt with on an outpatient basis. If an alternative to inhospital care is sought, one must ensure that at least the same level in quality of care is provided; hence, a day surgery program must provide well coordinated pre-operative and post-operative services which are normally provided to inhospital patients.

It appears that the pre-operative hospital stay may be reduced or eliminated in some cases if the pre-operative services are operating in an efficient and effective way. Eastough (1980) cited a study done in Baltimore which reported that 54% of inappropriate patient days were related to delays in performing or receiving diagnostic test results. However, the term inappropriate was not defined by Eastough. Also, in private hospitals, patients tend to have fewer tests and a shorter pre-operative hospital stay as compared to public owned hospitals where most patients are admitted without prior examination and testing. McCorkle (1970) investigated the LOS prior to surgery. He found that

the number of days spent in the hospital prior to surgery accounted for 25% of the total period of hospitalization. In Rochester, 56% of the patients were operated on by the end of the second day (Morton, Williams, & Kutner, 1968). Despite the limited generalizability and applicability of the findings mentioned above, they do indicate that some potential savings in terms of patient days can be realized by the reduction or elimination of pre-operative LOS. The same argument may perhaps be used in regard to the reduction or elimination of post-operative LOS, however more research is needed in this area.

Studies investigating the relationship between LOS and hospital characteristics have mainly focussed on occupancy rates and hospital size as measured by the number of beds. A high occupancy rate and a tight bed supply have been closely linked with a lower average LOS (Rafferty, 1971). It appears that such factors also promote the development of day surgery. Physician characteristics such as age, years of practice, and teaching duties have also been associated with patient LOS. Due to the multitude of factors which may influence the length of hospitalization and because of the dynamics which exist among the factors such as occupancy rates, physician characteristics, available resources, attitudes, and severity and complexity of patients' problems, it is very difficult to analyze causal relationships between these factors and the LOS and/or surgical rates.

## 2.3 IMPLICATIONS OF ESTABLISHING DAY SURGERY PROGRAMS

The concept of day surgery has both social and economical implications (Simpson, 1976). Day surgery implies a shift of medical responsibility for post-operative care from members of the hospital nursing and medical staff to the patients themselves, their family members, and/or members of the community's health team, such as general practitioners, nurses employed by home care programs, and other community health personnel. Garraoway, Ruckley, and Prescott (1978) noted that the extent to which day surgery can be implemented will depend upon the willingness of these people to accept the additional responsibility; however, the authors failed to indicate whether the surgeons or specialists are willing to relinquish their responsibilities.

The economic benefits of day surgery can be materialized if substitution of inpatient care by ambulatory care does occur, but there is no guarantee this will happen automatically. As noted by Evans and Robinson (1980), British Columbia has experienced some substitution of inpatient care, but it appears that day surgery programs also have resulted in an overall increase in the total number of surgeries performed in British Columbia. This increase may be viewed from two different perspectives depending on whether the increase is attributable to the needs of the patients. It may be viewed favourably because society's needs for surgical services are provided at a

lower cost than if the total surgical workload was performed on an inpatient basis. On the other hand, the increase in the total number of surgeries performed may be due to an increase in the number of unnecessary or inappropriate procedures being performed. This interpretation is based on the fact that, with the present fee-schedule for reimbursement, physicians may be given the incentive to over-utilize existing facilities and patients do not pay directly for the service received (Soderstrom, 1978).

If day surgery programs are established for the purpose of substituting ambulatory for inpatient care, proper control mechanisms are needed to assure that over-utilization will not occur, especially if the present surgical rates are judged to be inappropriately high. Prior to implementing day surgery programs on a province-wide basis, it is imperative to examine the rammifications of such a new policy on the total health care system (Evans & Robinson, 1980).

### 2.3.1 ACCEPTANCE OF THE CONCEPT OF DAY SURGERY

The public's attitude toward the various modalities of health care delivery is an important determinant of the demand for such health services. At the same time, attitudes of health practitioners, particularly physicians, also play a significant and perhaps a more important role in generating the demand for health care services (Soderstrom, 1978). Oosterlee and Dudley (1979) noted that

> attitudes towards illness and surgery are very much a product of cultural inheritance and contemporary experience so that both those giving and those receiving care accept certain norms that tend to change very slowly (p. 1459).

If the substitution of inpatient surgical care by outpatient services is to occur, it is essential that both the providers (physicians) and the clients are prepared to accept the shift. Funding agencies, such as governments, must also play an important role in promoting day surgery (Evans & Robinson, 1980).

PHYSICIAN ACCEPTANCE

A few studies attempted to investigate physicians' attitudes toward the concept of day surgery and it appears that physicians were in general accepting the concept of early ambulation and day surgery. Davis and Detner (1972) noted that surgeons were generally in favour of day surgery. Garraway, et. al. (1978) reported that 80 out of 108 (80%) general practitioners mentioned that they themselves would be prepared to receive day surgery. Both studies excluded physicians who were not involved with day surgery. It is important that attitudes of all physicians, or a representative sample of physicians potentially capable of being involved with a day surgery program, be investigated to gain an insight into the potential growth of day surgery services.

Attitudes of the general practitioners should also be sought. Their participation with day surgery is usually as a referral source to the specialists; furthermore, Ogg (1980)

pointed out that general practitioners can play an important role in the pre-operative medical assessment and the post-operative care. In rural areas, general practitioners can also take an active role in performing surgery (Allin, 1981).

CLIENT ACCEPTANCE

Some studies have shown that patients were generally in favour of the concept of day surgery. For example, Dawson and Read (1980) cited a large prospective study done by the United States Department of Health, Education, and Welfare where patient acceptance was found to be very satisfactory. Cohen, Keneally, Black, Gaffiney, and Johnson (1980) as well as Ruckley, Ludgate, Maclean, and Espley (1973) report similar findings.

Some studies have centered on parental acceptance of pediatric day surgery. Shah, Papageorgis, Robinson, Kinnis, and Israels (1964) reported positive parental attitudes towards day surgery for children. Lacny (1975) suggested that the previous exposure of parents to day surgery had a positive effect on the acceptance of pediatric day surgery. This implies that if acceptance of the concept is to be achieved on a community-wide basis, information about the safety and benefits of day surgery must be disseminated to the public at large.

Hospital administrators, government agencies, and nurses could influence the development of the day surgery concept. It is evident that the manner in which resources

also allocated, whether at the institutional or government level, will influence the extent to which day surgery services develop. Although the decision-making process or framework can be made more objective for decision-makers, establishing priorities to allocate resources will still relie on the subjective value judgements of those who make the decisions. (Trivedi & Williams, 1980). The nursing profession will likely react favourably to the development of more day surgery services since the need for night shift work would be reduced. Nevertheless because of the physician's dominant role in making therapeutic decisions, they are probably the most influential group which can promote the concept of day surgery (Soderstrom, 1978).

### 2.3.2 ADVANTAGES AND DISADVANTAGES OF DAY SURGERY

#### (1) ADVANTAGES

Economic Benefits: Day surgery has been advocated by several authors because of its potential economical benefits (Evans & Robinson, 1980; Marks et al., 1980). According to Evans and Robinson (1980), some studies on cost savings did not address the issue properly because the studies attempted to compare day hospital cost with hospital per diem or total charges. For a sound comparison of attributable costs, the cases studied must be comparable. For example, Evans and Robinson (1980) used a quasi-controlled method for comparing the costs between two groups of medically similar patients. All the separations of children who underwent a surgical

procedure at the Vancouver Children's Hospital in 1975 were reviewed. Of those who had undergone a surgical procedure, 2,169 patients received care at a day surgery unit while 1,892 patients received the service as inpatients. Using a standardized selection criteria for admission to a day surgery unit, 460 out of 1,892 hospitalized patients were judged to be eligible for day care surgery. The 460 patients selected were compared to the 2,169 children who received care on a day surgery basis. The findings indicated potential savings from day surgery.

In a quasi-controlled experimental design, the control of case variations by matching is usually very difficult if not impossible (Welkowitz, Ewen, & Cohen, 1976). Despite the inherent methodological limitations, there seems to be sufficient evidence that day surgery can provide economic savings. Savings would only be realized if the overall utilization of surgical services would not increase because of the availability of more hospital inpatient beds. Cost benefit studies on day surgery do not adequately address the increased cost resulting from properly servicing a day surgery program (e.g., proper selection of patients, pre-operative and post-operative services). While the economic benefits of day surgery have been given much attention, other advantages have been cited in the literature.

Reduction of the Waiting List for Elective Surgical Cases: Frequently, from a systems perspective, day surgery has been

found to be an effective approach to relieve the chronic bed shortages (Simpson, 1976; Cohen, et al. 1980). Such an approach also has the effect of reducing the waiting time for individuals to receive care.

More Effective Use of Physicians' Time: This is achieved mainly by decreasing the number of post-operative visits by the surgeons (Ogg, 1980).

Less Psychological Stress Due to Hospitalization: This is particularly evident in pediatric cases (Lacny, 1975).

Decreasing the Probability of Hospital Acquired Infection: Unnecessary hospitalization reduces the general health status of the population by increasing the likelihood of iatrogenic complications which may arise from the exposure to antibiotic resistant bacteria (Steward, 1975; Eastough, 1980).

**(2) DISADVANTAGES**

The main disadvantages of day surgery are that post-operative complications may arise after the patient has been sent home. It appears that complications occur infrequently and can be minimized or avoided by the proper selection of patients, stringent pre-anaesthetic examination, advanced anaesthetic and surgical techniques, and the provision of adequate post-operative services (Lacny, 1975).

A major concern, particularly of governments, with the expansion of day surgery services is that it may introduce additional costs to the health care system if proper

monitoring and control systems are not in place. Thus, it is absolutely necessary that the expansion of day surgery programs does not occur as an "add on service", but rather that it will provide a means for converting minor (low risk) hospital inpatient surgical cases to ambulatory cases.

### 2.3.3 COMPLICATION RATES AND QUALITY OF CARE

The literature provides numerous studies concerning the complication rates arising from the various procedures performed in day surgery programs. Complications can arise both before or after the patient is discharged from the unit. The research strategy used, the types of procedures performed, the types of patients selected, and the definitions used to identify complicated cases are some of the factors which will influence the reported figures for complication rates. In order to show that a shorter LOS does not necessarily increase the risk, some studies have compared a short LOS (1-2 days) with a longer LOS (6 or more days) for certain surgical procedures with no difference in medical outcome (Adler, 1977; Doran, 1972; Russel, Devlin, & Fell, 1977; Morris, Ward, & Handyside, 1968; Shah, Robinson, Kinnis, & Davenport, 1972).

Some studies have shown that there was no difference in terms of outcome between selected patients treated on a day surgical basis and similar patients receiving surgical inpatient care. One such study done by Garraway et al. (1978) investigated the complication rates of the patients

who underwent varicose vein or hernia operations. Ruckley, Cuthbertson, Fenwick, Prescott, and Garraway (1978) compared the medical outcomes among three alternative care modes for hernia and varicose veins: (a) two day post-operative care in an acute hospital, (b) two days in a convalecent hospital, and (c) at home. These three groups were found not to differ in the level of care needed for the treatment of complications after discharge from the hospital. However, a study done by Russel et al. (1977) indicated that after haemorrhoidectomy operations, complications were twice as common in the day surgery group as compared to the 5-6 day stay group in a hospital. Many of the results obtained in the above studies are limited due to a lack of controlled clinical trials. Also, the comparability of the samples used is questionable.

The commonly reported types of complications which occur before or after discharge are: nausea, vomiting, dizziness, drowsiness, and hypertension (Dawson & Reed, 1980; Ogg, 1980). Reported rates of the complications serious enough to necessitate admission to an inpatient ward are very low, and usually range from 0 to 5% (Shah, 1980; Steward, 1973; Steward, 1975; Edelist & Urback, 1980; Lacny, 1975). At the Calgary Foothills Hospital, the patient admission rate to the hospital via the day care surgery program, over a five year period (1976 to 1980), has remained fairly constant at 1.3% of all day surgery cases (Harrison, 1981). Based on the above review, it may be

concluded that when a day surgery program is properly implemented, day surgery offers an efficient alternative mode of care for certain procedures which traditionally have been performed in inpatient surgical units.

### 2.3.4 TYPES OF FACILITIES

Generally speaking, it appears that there are two broad categories of day surgery facilities: (a) a unit which is a free-standing facility, and (b) a unit that is part of a hospital facility. A free-standing facility can be either a completely autonomous privately owned free-standing facility, often known as a surgicentre or medicentre, or a hospital-linked free-standing facility. A major concern with the surgicentre approach is that it exposes patients to more risks due to the lack of emergency back-up facilities which are usually provided by hospitals. Lacny (1975) states that surgicentres tend to select lower risk patients and perform a smaller variety of surgical procedures. Whether such patients are the day surgery type of cases or the physician's office type of cases remains to be studied.

Hospital based facilities also differ in their organization. It appears that the vast majority of hospitals use their main surgical suites for both inpatient and ambulatory surgery (Burns & Ferber, 1981). Basically, hospital based day surgery services can be classified into three groups (Lacny, 1975).

Type A: This group consists of day surgery services which

share the whole spectrum of hospital inpatient physical facilities and services. The main advantages as seen by O'Donovan (1976) are as follows: (a) a day surgery program is established with very little need for capital expenditure and additional personnel, such as admitting clerks or nurses, (b) the program can be easily established since the inpatient facilities already exist, (c) this alternative, at the initial stage of the program, provides flexibility to expand or reduce the program without incurring any financial loss, depending on the factors such as physician acceptance and demand for service, and (d)this alternative makes efficient use of exising facilities.

One of the concerns with this type of facility is that day surgery clients may be treated as second class patients since the hospital is organized and established primarily for inpatient care. Areas such as pre-op rooms, post-op rooms, and waiting rooms have been designed for inpatient surgery and are not necessarily suitable for day surgery (i.e., patients may undergo unnecessary psychological stress). Also, the hospital's main operating room personnel may not have the proper training or time to provide the special needs which are required by day surgery patients (Minister of National Health and Welfare, 1978). In addition, the coordination of the pre-operation and post-operation process may be more difficult if the staff is pre-occupied with inpatient cases.

Type B: Here, the hospital's day surgery unit shares some of

the hospital's inpatient physical facilities and services. For example, a day surgery unit may have autonomous admission, discharge,and nursing care facilities, but share the hospital's main operating and recovery room. The main advantage of this alternative is that the program is tailored more for day surgery patients. This alternative also makes efficient use of the exsisting hospital surgical inpatient facilities such as the operating room; however, day surgery schedules may be interrupted by the need for emergency services because inpatient surgery will generally have priority over day surgery.

Type C: This unit would have completely autonomous surgical and related facilities. From the physical facilities standpoint, this alternative attempts to maximize patient care. There is some indication that personnel, patients, and physicians are more satisfied with this arrangement than alternative ones (O'Donovan, 1976). This approach, however, requires a substantial capital expenditure and the training of personnel.

### 2.3.5 TYPES OF PROCEDURES PERFORMED

It appears that there is substantial variation in the types of surgical procedures routinely performed on a day surgery basis among hospitals and regions. The development of new treatment regimens and protocol is very sensitive to technological advances, and the need for day surgery will be significantly affected as the techniques in these areas

change with time. The availability of information required to forecast the service need is usually limited, and one must analyze past utilization data before attempting to forecast future need.

The experiences of individual hospitals with a day surgery program have been reported by many writers. However, the use of this information for day surgery planning is limited, since the experience of a hospital is affected by several hospital variables, such as service population, patient case-mix, and supply of physicians. Utilization rates estimated from a large regional or provincial data base would yield more accurate information on the type and quantity of day surgery procedures which could potentially be performed. Even at a regional or provincial level, comparisons are limited since it has been shown that surgical rates do vary among provinces (Vayda & Anderson, 1975).

Some authors have alluded to the question of what portion of the total volume of surgery could be performed on a day surgery basis. Davis and Dunham (1973) speculated that between 20% and 40% of all operations could be done on a day surgery basis. Robinson, Shah, Argue, Kinnis, and Israels (1969) suggested that 40% of the children admitted for surgery at the Health Centre for Children in Vancouver were suitable candidates for day surgery. Steward (1980) also suggested that at least 50% of all pediatric surgeries could be performed on a day visit basis. These estimates or

proportions are based on the subjective evaluation of one or two persons and do not necessarily reflect the majority of physicians' opinions. It is evident that estimates derived from a group of experts are preferable to the judgement of one or two individuals.

Numerous articles in the literature attempted to provide a list of the most commonly performed day surgery procedures. Appendix B lists the 25 most common day surgery procedures which were performed in British Columbia during 1977. Dilation and curettage of the uterus was the most common procedure performed, and accounted for approximately 16% of all day surgery procedures. In the Oregon Region of the Kaiser Foundation Health Plan, dilation and curettage of the uterus was also reported as the most common day surgery procedure; in 1974, it accounted for 25% of all day surgery procedures (Marks, 1980). Other common procedures reported in the Oregon Region were: incision or excision of lesion of the skin and subcutaneous tissue, tubal-ligation, biopsy of breast, myringotomy, and circumcision. The British Columbia experience, as given in Table 4, is suggestive of the quantity of surgery by type of operations which could be performed on a day surgery basis. However, these statistics do not necessarily reflect the true need, and may not coincide with the opinion of the experts (i.e., physicians). Further direct application of these rates to the Alberta population would be of potential value, although the possibility of accomplishing this is questionable given that

TABLE 4

Day Surgery in British Columbia by Types of Operations
1977

| Operation Group ICD-8 | Total Volume[1] of Operations (000) | Number of[2] Day Surgery Operations (000) | % of Total Operations | Day[3] Surgery Rate per 100,000 |
|---|---|---|---|---|
| Neurosurgery | 4.4 | 1.4 | 31 | 54 |
| Ophthalmology | 9.2 | 2.8 | 31 | 113 |
| Otorhinolaryngology | 22.0 | 5.6 | 25 | 223 |
| Operations on the Thyroid, Parathyroid, Thymus and Adrenals | 0.8 | negligible | 3 | 1 |
| Vascular and Cardial Surgery | 8.1 | 0.4 | 5 | 16 |
| Thoracic Surgery | 1.9 | 0.2 | 12 | 9 |
| Abdominal Surgery | 25.3 | 0.6 | 2 | 23 |
| Proctological Surgery | 5.9 | 0.8 | 14 | 33 |
| Urological Surgery | 17.2 | 5.1 | 29 | 203 |

(Cont'd)

(TABLE 4 Cont'd)

| Operation Group ICD-8 | Total Volume[1] of Operations (000) | Number of[2] Day Surgery Operations (000) | % of Total Operations | Day[3] Surgery Rate per 100,000 |
|---|---|---|---|---|
| Breast Surgery | 4.3 | 1.8 | 43 | 73 |
| Gynecological Surgery | 40.0 | 15.3 | 38 | 611 |
| Obstetrical Procedures | 36.4 | 8.4 | 23 | 337 |
| Orthopaedic Surgery | 37.2 | 6.4 | 17 | 258 |
| Plastic Surgery | 13.1 | 4.9 | 38 | 198 |
| Oral and Maxillofacial Surgery | 2.3 | 0.6 | 25 | 24 |
| Dental Surgery | 7.9 | 5.4 | 69 | 218 |
| Biopsy | 7.8 | 2.5 | 32 | 99 |
| Diagnostic Endoscopy | 20.0 | 11.2 | 56 | 448 |
| Diagnostic Radiography | 12.5 | 2.7 | 31 | 107 |
| Other Non-surgical Procedures | 1.6 | 0.1 | 7 | 5 |
| TOTAL | 281.3 | 76.2 | 27 | 3,050 |

(Cont'd)

(TABLE 4 Cont'd)

[1,2]From Surgical Procedures and Treatment, Statistics Canada, Catalogue 82-208 and Annual Report on Day Care Surgery in British Columbia (B.C.) 1975-1977, British Columbia Hospital Insurance Service.

[3]Based on B.C. population estimate for 1977 of 2,497,600.

the type and quantity of physical facilities and the supply of physicians differ between the two provinces. Also, Alberta has a much larger portion of its population in the 0-29 age category, whereas British Columbia has a larger portion of its population in the 45-65 age category (Statistics Canada Estimation, 1977). Consequently, one would expect Alberta to have a larger proportion of day surgery cases, since elderly patients are less disposed to care on a day surgery basis.

The Alberta Medical Association (AMA) approved in January, 1981, a list of possible surgical, medical, and diagnostic procedures that could be done safely in a day surgery unit. The list was originally developed by the Department of National Health and Welfare (1978) and was revised by the AMA's Nucleus Committee which was composed of representatives from the AMA, the Alberta Hospital Association, the Metropolitan Council of Hospitals, and the Faculties of Medicine of the University of Alberta and the University of Calgary. As given in Appendix C, the list is divided into nine categories according to specialty: (1) general and chest surgery, (2) gynecology, (3) oral surgery, (4) ophthalmology, (5) orthopaedics and neurosurgery, (6) otorhinolaryngology, (7) plastic surgery, (8) urology, and (9) medical and diagnostic procedures. Because such a list may need modification in the future, it is essential that criteria be established by which all surgical procedures can be reviewed periodically to determine which procedures are

suitable for day surgery. The Minister of National Health and Welfare (1978) recommends the following criteria:

1. Elective and non-elective minor diagnostic and surgical procedures that require the use of less than one and one-half hours of general anaesthesia.
2. Procedures which require only local anaesthesia and are not suitable for an office environment due to the magnitude of the procedure and/or the need for specialized instruments.
3. Procedures under local anaesthesia which require an extended period of post-operative observation.
4. Endoscopic procedures under general or local anaesthesia.
5. Cosmetic and plastic surgical procedures which, due to the degree of care and attention needed, require operating room facilities.
6. Oral or dental surgical procedures requiring a general anaesthetic and which should be performed in a hospital under the supervision of a qualified anaesthetist.

It appears that further research is required to assess appropriately the effectiveness of such criteria in terms of physician decision-making.

Variables required for selecting patients have been identified in recent years. Trivedi and Williams (1980) presented a common list of assessment variables for deciding the suitability of performing procedures on a day surgery basis, from three different perspectives as shown in Table 5.

In the Canadian context, patients currently need not be concerned about the direct cost differential or the insurance coverage. However, some patients, particularly those living in rural areas, may find the day surgery mode more expensive than the inpatient mode if they are required

TABLE 5

Common Variables for Classifying
Day Surgery Cases from Three Perspectives

| | |
|---|---|
| Physicians | Patient's Age<br>Patient's physical status (weight & history)<br>Previous surgery and other diagnoses<br>Patient anaesthesiology risk (ASA class)<br>Surgeon's experience and setting preference<br>Patient's apprehension<br>Complexity of procedure<br>Multiple procedures |
| Patient | Patient preferences<br>Support at home for post-operative care<br>Cost and insurance coverage |
| Community | Availability of ambulatory services<br>Availability of alternative facilities (physicians' offices/inpatient services)<br>Local and state regulations |

Source: Trivedi, V.M., & Williams, S.J. Planning and Decision-Making for Ambulatory Surgery. Journal of Medical Systems, 1980, 4, (314), 327-345.

to stay overnight in a hotel. Also in Canada there are few, if any, local and provincial regulations concerning day surgery services in most Canadian provinces (Shah, 1980). Travel time (or distance) from the patient's home to a hospital has also been an important consideration for the physician (Minister of National Health and Welfare, 1978). This is mainly because of the increased risk to the patient of being far away from any emergency back-up services. It appears that criteria in respect to each variable, such as appropriate age or anaesthetic risk, require clearer definition. Also, the question of whether the assessment criteria should be based on the type of procedure or the type of surgical patient is not adequately addressed in the literature.

## 2.4 METHODOLOGICAL REVIEW

This section consists of a selected review of the literature on the methodology relevant to the subject matter. The review will examine the applicability of various methodologies in determining the service need for day surgery in Alberta.

### 2.4.1 THE CONCEPT OF NEED, DEMAND, AND UTILIZATION

"Need" is a concept which is very difficult to define and measure. Soderstrom (1978) defines the "need" for health services as

> the health services that an expert (e.g. physician, administrator, or planner) thinks that a person or population ought to use. Need reflects the expert's [subjective value judgement] toward health care not necessarily the users, [and is subject to variation depending on the expert's value system, attitudes, etc.]. Also, need usually ignores the financial constraints facing the people [or the public, if the system is financed through taxation] (p. 175).

Various authors have proposed many different definitions of "need", but the involvement of subjectivity and value judgement in defining the term makes objective measurement almost impossible.

The demand for health care services refers to the degree to which people want to use health services (Soderstrom, 1978). Soderstrom (1978) outlines six determinants of demand: (1) incidence of illness, (2) attitude towards health services, (3) information, (4) price of health services, (5) income, and (6) decisions of health practitioners particularly physicians. Utilization of health services is the result of interaction between the demand and supply of services.

It has been a common practice to estimate the "need" for health care services from utilization data, because utilization data are readily available for analysis. This approach has severe limitations since utilization patterns are usually affected by the availability of services (e.g., day surgery). This was particularly evident at the Calgary Foothills Hospital day surgery program; the supply of day surgery beds had a strong association with the utilization level (Lacny, 1975). In addition, it has been generally

recognized that "the age-sex composition of a population is a very important determinant of its utilization of health services"(Soderstrom, 1978, p.175).

Logically, the "need" for day surgery services should depend on the following: (a) the size and composition of the service population, (b) the health status of the service population, and (c) the opinions of the medical professionals as to which procedures can be done as day surgery. The demand for the service is, however, usually determined by several facters such as: (a) the skill of the surgeons and other physicians, (b) the patients' acceptance, (c) the type of post-operative services required at the patient's home, (d) the distance of the patient's home, and (e) the availability of other health care facilities such as auxiliary hospitals, nursing homes, and acute care inpatient beds (Lacny, 1975). O'Donovan (1976) cited that some hospitals would develop day surgery programs only in reaction to environmental constraints such as a shortage of acute care beds. Hence, one can conclude that because of the limitations in determining "need" from utilization data, an alternative method to measure "need" should be investigated.

### 2.4.2 SURVEY RESEARCH TECHNIQUES

A survey can be classified by its method of data collection (Ferber, Sheatsley, Turner, & Waksbery, 1980). The three survey methods frequently used in the health care field are: (a) the mail questionnaire, (b) the personal

interview, and (c) the telephone interview.

**(1) THE MAIL QUESTIONNAIRE**

The mail questionnaire method is an economical and potentially efficient method for obtaining research information from individuals (Armour & Bedell, 1978; Cartwright & Ward, 1968; Moser & Kalton, 1973). It offers great savings in time, money, and professional energy over other methods of data collection, such as personal interviews. The validity of the information obtained from the survey is highly contingent on how well and how carefully the questionnaire is structured or designed for accurate measurement.

The mail questionnaire is a survey method frequently applied to professional group members. Members of professional groups have no literacy or communication problems when surveyed by mailed questionnaires (Cartwright & Ward, 1968) if they are properly designed and executed. There are several reasons why the mail questionnaire method is advantageous over the other survey methods: (a) it is a more economical method for a geographically scattered study population, (b) it provides a uniform measurement due to its standardized questions, (c) the questionnaire allows for the anonymity of the respondent (Nevin & Ford, 1976), and (d) mailed questionnnaires are more convenient for respondents to complete, especially for professionals such as physicians.

The main disadvantage of a self-administered questionnaire method is the difficulty of achieving an adequate response rate. A low response rate renders the survey results doubtful. This is because usually there is no valid way of scientifically inferring the responses of the sub-population represented by the non-respondents, unless the study is initially designed to further investigate the non-respondent sample, or another data base is available for adjusting the effects of non-response, which are usually not satisfactory.

Market researchers have for some time investigated techniques to increase the response rate. Amour and Bendell (1978) suggested that at least an 80% response rate must be achieved before a researcher can feel confident that his/her data are free from sample biases that would potentially invalidate the results. Gough and Hall (1977) did a study to compare physicians who did respond to those who did not respond to a mail questionnaire. They suggested that a response rate of at least 75% and a large sample size of respondents to the mail survey will constitute an acceptable sample. It appears that the problem of a low response rate is not unusual in surveying a professional group such as physicians. This is partly due to the vast amount of mail which professionals usually receive (Cartwright & Ward, 1968).

Nevertheless, several studies conducted on physicians by means of a mail questionnaire between 1946 and 1966 have

reported response rates varying between 60 and 88 percent (Cartwright & Ward, 1968), suggesting the possibility of a reduced non-response problem if a survey is properly designed. Garraway et al. (1978) reported an 83% response rate in a mail questionnaire designed to obtain general practitioners' attitudes and opinions on day surgery. Because response rate significantly affects the quality of the survey data, one must ensure that various techniques for recovering non-respondents and/or adjusting for the effects of non-response are investigated and used if applicable. Andrews (1978) reported that a researcher can influence response rates at almost all phases of a study: (a) before the questionnaire is mailed, by prior contact with the target population, (b) at the time of designing the questionnaire, by the length of the questionnaire, the color of the paper, and the size, (c) at the time of mailing, by including such things as a covering letter, deadlines, and incentives, and (d) after mailing, by a follow-up of survey non-respondents through interviews, phone calls, or correspondence. It was also suggested that a complex interaction existed between the population under study and the techniques used to increase response rates, indicating the survey researcher must exercise extreme caution when conducting a mail survey.

**(2) THE PERSONAL INTERVIEW**

An advantage of having a questionnaire administered by an interviewer is that this method usually achieve a higher

response rate than mail surveys (Babbie, 1973). The personal interview is a method applied to situations where complex information is requested. It is also a method particularly effective when dealing with the general public especially those in the category of low social economic status (Ferber et al., 1980). The presence of the interviewer allows for instant feedback to the respondent who may require assistance. The personal interview method is extremely costly when applied to a large sample and/or geographical region. This method is also prone to response errors due to interviewer bias or interviewer-respondent interaction (Moser & Kalton, 1973).

**(3) THE TELEPHONE INTERVIEW**

The telephone interview method is usually considered to be similar to the personal interview method. The telephone interview appears to be a more economical and efficient way than the personal interview and is more applicable in surveying large geographical areas at a low cost. The telephone interview method eliminates non-verbal cues which may influence the interviewee's response (Bay, 1981). However, the telephone interview method is limited to simple questions and is more disposed to communication problems. The effects of unlisted phone numbers may also invalidate the results, although some new techniques with a random selection device may overcome this problem (Bay, 1981). Another disadvantage of the telephone interview method is that it excludes individuals without telephones from the

sample (Bay, 1981).

The three approaches discussed above, are by no means all exclusive. It is evident that a combination of the alternatives discussed can also be used. For example, it is often a practice to solicit responses by phone or personal interview from those who initially declined to return a mail questionnaire.

### 2.4.3 SAMPLING TECHNIQUES

Complete enumeration, which implies surveying all of the elements in the population under study, will increase the cost of the study and will not necessarily result in a more accurate survey (Babbie, 1973). An alternative to complete enumeration is the use of sampling techniques. Babbie (1973) discusses several types of sampling designs employed by researchers. The commonly suggested sampling designs used by researchers are the following: (a) simple random sampling, (b) systematic sampling, (c) stratified sampling, (d) cluster sampling, and (e) some combination of these.

Moser and Kalton (1973) define simple random sampling as

> each possible sample of different elements [having] an equal chance of being selected, which also implies that every member of the population has an equal chance of selection into the sample (p. 81).

Simple random sampling, however, is seldomly used in practice because it is laborious to number manually the list

of elements in the population to be surveyed and then to use a table of random numbers to select the sample (Babbie, 1973; Moser & Kalton, 1973). Babbie (1973) noted that if a list of elements is available, researchers will usually employ a systematic sampling technique.

With systematic sampling, every Kth element is selected starting with a randomly chosen number between 1 and K inclusive (Moser & Kalton, 1973). This technique approaches a simple random sample if the list of elements is in a random order. According to Moser and Kalton (1973), no ordinary list is in a random order. However, if a systematic sample is selected from a list arranged in some randomness, then the method of selection is called quasi-random sampling and is virtually indentical to simple-random sampling. Hence, systematic sampling is a more convenient technique to use than is simple random sampling, and systematic sampling can potentially be an efficient technique.

If the elements of the population to be sampled are heterogeneous, one should stratify the population into homogeneous subsamples according to one or more variables which are related to the variables of interest, i.e., stratification procedures are used to minimize the differences within a stratum and to maximize the differences among the strata (Hess, Riedel, & Fitzpatrick, 1975). One must not "over-stratify", since a stratified sample that is constructed to estimate one variable with increased precision may result in less precise estimates for other

variables (Moser & Kalton, 1973).

In stratified sampling one divides the target population into strata and selects a sample from each stratum. Occasionally, it is advantageous to divide the target population into a number of groups, or clusters, and to select a sample of clusters. Such a sampling design is called cluster sampling, and is used frequently in surveys to reduce the cost of gathering data (Moser & Kalton, 1973). The objective is to select clusters that are as heterogeneous as possible, but small enough to reduce survey costs for such things as listing all members of the target population. Once a sample of clusters has been selected one may include in the sample all elements belonging in each cluster and treat them as a sample, or one may sample from each cluster using other sampling designs. For certain studies it is difficult to divide the target population into clusters, making this option inapplicable.

The four types of sampling design discussed above have been looked at separately, but one must be aware that the four methods can be used in some combination.

### 2.4.4 DELPHI TECHNIQUE

A descriptive study will usually collect facts about a particular situation. Good description often forms the base for more advanced research studies involved with hypothesis formation (Cole, 1976). For example, in searching for ways to improve the health care delivery system, it is imperative

that some facts be found to indicate which areas need improvement. Most descriptive studies have usually consisted of descriptions of past experiences in the form of comparisons between two or more variables. However, need assessment studies based on a descriptive approach are limited due to their reliance on historical information. More recently, policy formation or need assessment studies have adopted a normative approach which basically attempts to find out what "could" or "should" be done rather than what is immediately feasible or likely (Sutherland, 1975). The Delphi is one technique which can be applied in a study using the normative approach.

The Delphi technique is becoming a popular planning tool in the health care field (Starkweather, Gelwicks, & Newcomer, 1975). The Delphi is considered to be a qualitative forecasting and consensus-reaching method. The technique is designed to reduce difficulties such as interpersonal biases, which may arise from group interaction, inherent in the group process in a committee format (Starkweather et al., 1975). "The Delphi is a method for the systematic solicitation and collation of informed judgements on a particular topic" (Mclaughlin & Sheldon, 1974, p. 41). Although the technique was originally developed as a forecasting method and as a means of seeking consensus among a homogenous group of experts, a variation of it, called policy Delphi, is frequently utilized to obtain divergent views from a panel of experts on a

particular issue. The Delphi technique is used in situations where there is little or no available historical information for forecasting. The advantage of using this technique is that the members of the panel never need to meet, since communication with the members is done by mail or through computers and the members usually remain anonymous.

An application of this technique in the context of day surgery (i.e., determining the type of procedures which can be safely performed on a one day basis) may resemble the following. The members of the panel of experts on the subject matter, preferably physicians experienced with day surgery programs, would be sent (by mail) a list of potential procedures which should or could be perfomed on a day surgery basis; the panel members would review and modify the list where appropriate. The members' responses are then collected, collated, and returned to the members of the panel for re-evaluation. The process is repeated several times and hopefully the members' views would converge to form a final list of procedures which would be accepted by most of the panel members.

This method effectively uses the time of the panel members, since there are no formal committee meetings which are often time consuming. The total process is a very difficult and potentially lengthy one (Harrington, 1977). It has been found that the Delphi technique offers little except reconfirmation of the first round results when applied to physicians (Romm & Hulka, 1979). An explanation

for this was that if the first round responses were accurate summaries of physicians' practices, then one should not expect much change even after exposing the physicians to their colleagues' perceptions. It is difficult to determine whether the findings of the above study can be generalized. It may well be that the method and approach used by Romm and Hulka (1979) affected the results.

Decision-making in medicine is often based on incomplete information. However, the need for day surgery would be more accurately estimated if physicians could agree on care standards, admission criteria, and a list of procedures which could be performed on a day surgery basis. The Delphi method provides a means of obtaining such information. However, the need for recycling responses, typically adopted by a Delphi study, is not necessary in all situations.

### 2.4.5 DECISION ANALYSIS

Analytical tools such as decision analysis can be used to supplement clinical decision-making and to facilitate the planning of health care facilities (Trivedi & Williams, 1980). The limitations of the availability of data required to use such tools has been a major reason why further development has not occurred. However, Trivedi and Williams (1980) presented an analytical model based on decision analysis theory to address the question of whether to perform a surgery case on a day visit basis. The study

consisted of the analysis of hospital discharge data of one and two day LOS cases for four surgical procedures which could be done on a day surgery basis i.e., dilation and curettage of the uterus (D&C), herniorrhaphy, and tonsillectomy with and without adenoidectomy. Three variables i.e., age, multiple procedures, and multiple diagnoses were used in the analysis to investigate their contributions to the LOS. Length of stay probabilities conditional to the three variables were derived. Although the results provided some descriptive data showing how each variable contributed to the LOS, it was proposed that these conditional probabilities could be used by applying the decision analysis model to decide whether a patient was suitable for day surgery. However, as recognized by Trivedi and Williams (1980) the difficulty of determing utility values lies in the lack of adequate information. More specifically, information is needed regarding the various components in the criteria for selecting day surgery patients i.e., surgeons' and patients' attitudes, morbidity rates, costs, patient characteristics, etc. It appears, therefore, that decision analysis could be useful, but more research is required.

## 2.5 SUMMARY

Since the 1960's, as indicated in the literature, there has been a growth of day surgery programs in both Europe and North America. Recently, researchers have made an effort to determine the benefits of establishing day surgery programs. It appears that, under the right conditions, day surgery programs may result in high quality care, cost savings, and other benefits.

It seems that there is a general understanding among the writers about the concept of day surgery. Furthermore, during the last twenty years, substantial progress has been made in developing criteria to select day surgery patients. Yet, it appears that there is still more research required to develop an improved definition and criteria to keep up to the changes in medical science and clinical practice. It is evident that there are numerous surgical procedures which can be done on an ambulatory basis within current medical technology. Historically, physicians have used their clinical judgements for determing which cases are appropriate for day surgery. Perhaps the further development of decision tools (such as classification systems) may assist physicians in resolving some of the inconsistencies in this type of decision-making.

As in any other publicly supported health and social programs, the attitudes of both the public and health practitioners play a significant role in the development of day surgery, suggesting the need for information about their

attitudes. The review also indicated that day surgery services in Alberta are neither well planned nor organized. In contrast, British Columbia has developed a province-wide policy on day surgery and a data base. Because of this, the British Columbia experience may be viewed as a base against which the performance of other Canadian provinces could be compared.

Some studies have focused on the documentation of the benefits gained by day surgery services in terms of one or more variables such as cost, complication rates, access to surgical services, and other potential gains. Even though there are apparent benefits in providing day surgery services, more conclusive evidence is needed to confirm this view because few studies were based on controlled clinical trials. Controlled experimentation is needed to study the overall benefits which day surgery provides to the health care system. Also, many of the studies are descriptive in nature and are not confirmative.

This chapter also reviewed pertinent research methods mentioned in the literature. The "need" for health services is usually a reflection of experts' opinions and value judgements towards such services. The relationships among the concepts of "need", demand, and utilization were presented, to illustrate their differences.

A survey research method is one way of measuring the "need" for services. The Delphi technique, survey methods, and sampling designs were reviewed for possible use in this

study. Decision analysis can be a valuable method to supplement health care providers in decision-making. However, such a method has limitations due to the unavailability of appropriate data.

# CHAPTER 3

## METHODOLOGY

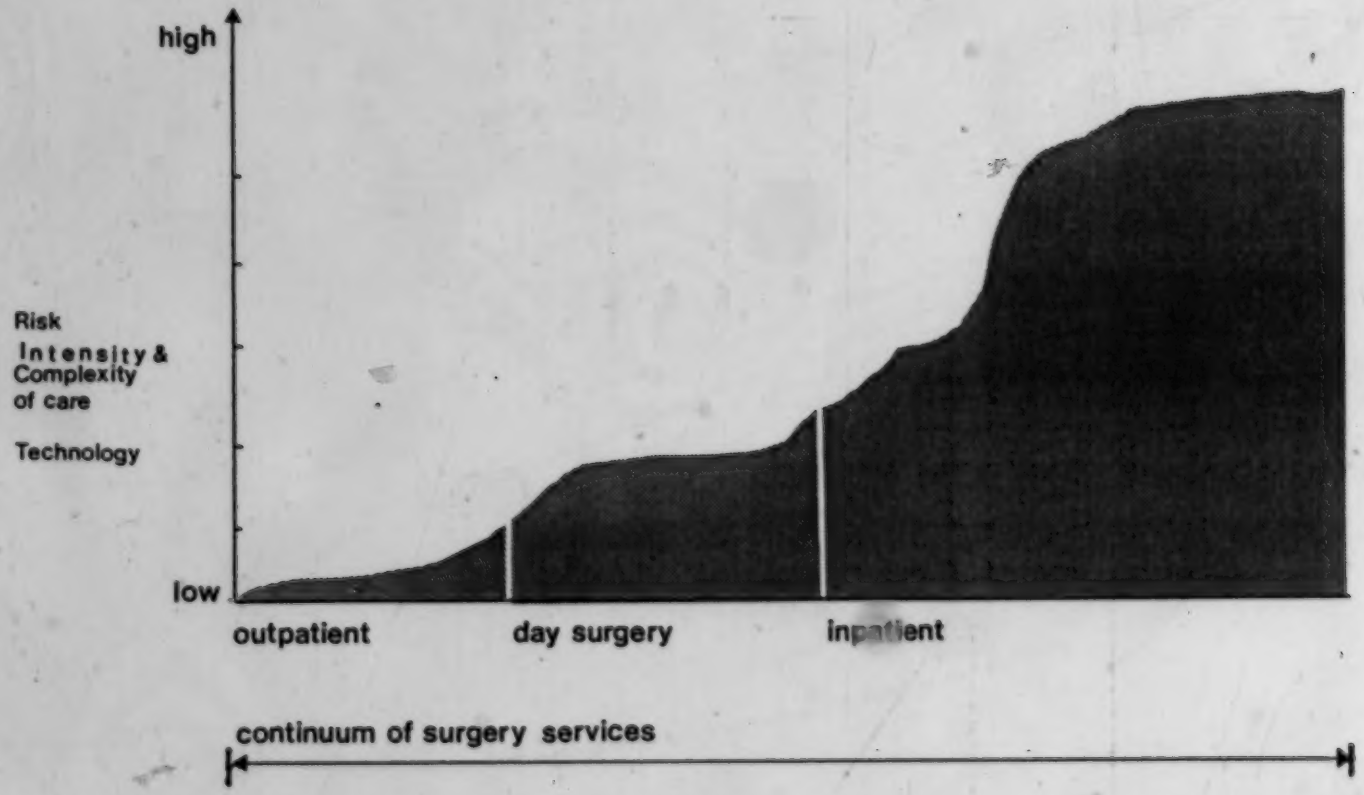
This chapter describes the methodology used for estimating the potential growth of day surgery service in Alberta. This is primarily achieved by soliciting physicians' opinions and analyzing surgical service utilization data which were available from the existing provincial patient information system. Areas which are discussed in this chapter include: (a) the conceptual framework and research strategy, (b) the basic model, (c) the estimation methods, and (d) the hospital survey.

### 3.1 CONCEPTUAL FRAMEWORK AND RESEARCH STRATEGY

Conceptually, the health status of individuals can be discussed with the notion of a continuum or spectrum consisting of the different states of health. At one end of the spectrum would lie individual(s) with absolute health and at the other extreme there would be those individual(s) with a complete absence of health leading to death. This notion of a continuum may also be applied to the realm of surgical care needs. Figure I illustrates the framework which applies this notion in terms of surgical care needs. This framework shows that surgical care needs will differ depending on the risk level involved with the operation. The risk level is determined by assessing: (a) the intensity

**Figure 1**

**A conceptual framework for surgical care needs**



and complexity of care required, (b) the service level, and (c) the level of technology needed to perform such operations. If a health care system is to be effective, the system must assure that clients will be treated at the right place depending on the type of care required. The continuum of surgery services can be classified into three surgical service modes: office, day, and inpatient modes. It is very likely that in some cases, such as those near the boundaries separating the three surgical modes shown in Figure 1, the assessment of the factors used for classification will be influenced by the physicians' and patients' attitudes. The three service modes depicted in Figure 1 are similar to those cited by Marks et al. (1980). The inpatient mode refers to surgical cases in which patients are required to be admitted to the hospital for at least one night. The day surgery mode refers to surgical cases where patients are not required to be admitted to the hospital but use the entire spectrum of the hospital's surgical services. Finally, the outpatient mode refers to surgical cases where patients have relatively minor surgical operations performed in a physician's office, a hospital clinic, a medicentre, or a hospital emergency room. Implicitly, this framework indicates that each type of surgical service mode is also associated with a continuum of cases differing in risk. One can infer from this model that, in order to determine service need for day surgery, some boundaries must be established with relation to inpatient services and

outpatient services. Depending on how these boundaries are established and on the availability of data, various research strategies may emerge. For the purpose of determining service need for day surgery in Alberta, four basic alternative research strategies may be considered: (1) prospective study, (2) use of hospital LOS, (3) expert opinion, and (4) foreign experience.

### 3.1.1 PROSPECTIVE STUDY

A prospective study would be an ideal research strategy to consider for determining the service need for day surgery. Ideally, the prospective review must be based on a pre-formulated assessment of patients and classification rules. Using this approach, a cohort of surgical patients must be selected by an appropriate sampling design so that the cohort is an adequate representation of all patients belonging to the different classes which reflect surgical service need. Hence, a patient classification system must be put in place to classify patients according to their respective surgical service needs. Such a system attempts to minimize the number of surgical patients being placed in inappropriate institutions, programs, or treatment regimes (Bay et al., 1980). Furthermore, it would minimize the patient's chances of undergoing unnecessary hospitalization or undue LOS in a hospital. Using the Bay et al. (1980) conceptual framework, the steps involved in using a patient classification system to estimate day surgery needs are as

follows:

1. Establish the criteria to assess the type of surgical patient.
2. The assessment of the patient cohort.
3. Classification, according to the criteria, of all surgical patients in the sample to each type of service.
4. Finally, once the cohort has been classified, an estimation of the proportion for each type of surgical service could be determined.

This strategy has various disadvantages: (a) there is a need to establish criteria to classify all surgical patients according to the type of procedures. This would require a significant amount of work and is recommended as a future research project, (b) prospective studies usually require large amounts of financial and human resources and time. Both the physicians' and patients' availability would be critical to the study. Alternatively, a review of medical charts and a retrospective classification of each patient or a probability sample could be done. However, the lack of uniformity in reporting information on medical charts would cause assessment problems. Ideally, a review of hospital inpatients, day surgery, and other outpatient surgical cases, including those cases served in physicians' offices or surgicentres, would have to be undertaken. Obtaining such data would be a difficult task.

### 3.1.2 USE OF HOSPITAL LOS DATA

An alternative approach to estimate potential growth for day surgery services is to examine hospital discharge data according to the LOS distribution for those cases which required surgical operations. This approach would be only an approximation, since it focuses on the inpatient mode service. This approach would rely on the assumption that short LOS cases could be served at a day surgery unit. Moreover, the researcher is faced with a difficult decision to identify which point reasonably divides the LOS distribution so that the short LOS cases are a good approximation of the type of cases which should be done on a day surgery basis (i.e. LOS = 1 day or LOS = 2). Further limitations with this approach are related to the inconsistent recording of day surgical data by some Alberta hospitals. Also, the estimation of need would be based on historical utilization data.

The main advantage of this approach is that it is a rather simple, more objective, and more economical way to estimate day surgery need, and to make optimum use of existing data related to surgical operations done in Alberta hospitals. Moreover, one can directly convert the estimated number of day surgery cases to the number of potential patient days or hospital beds saved. Basically, this approach produces descriptive estimations under the assumption that the conditions remain the same and that short LOS cases are appropriate for day surgery.

### 3.1.3 EXPERT OPINION

As opposed to the descriptive approach, what is really needed is a normative estimation of need, that is, what should happen under ideal conditions. This approach is heavily dependent on the "need". The determination of the "need" for health services relies heavily on the experts' views of what that "need" is. Whenever empirical data are not available, the researcher is resigned to seeking and using experts' opinions. The advantages of using experts' opinions are that the results are more likely to be accepted by the professional, and tend to give a closer measure of "need" as opposed to utilization or demand measures. However, as noted in the previous chapter, it is expected that the subjective nature of the experts' views of "need" will result in substantial variations in the opinions among professionals, making such data difficult to use.

The researcher has two extreme approaches to solicit expert opinion: (a) select a small number of experts and use the Delphi method or (b) use all professionals or a probability sample of professionals and conduct a survey to solicit opinions. As concluded from the literature review, the survey method approach appears to be a very convenient approach in terms of time from both the researcher's standpoint and those being surveyed. A major question which must be addressed when gathering expert opinions is who should participate in the study. More specifically, who should be selected as the panel members or who should be

included in the target population of the study. Admittedly, the method of weighting various opinions to derive a group opinion is a difficult task and the subjectivity of the results still remains.

### 3.1.4 FOREIGN EXPERIENCE

Utilization rates obtained from populations other than the Alberta population may be used as a prototype in an attempt to estimate the need for a particular service. This method has been employed in the past by many researchers and planners; however, this approach does have limitations. To obtain a reasonable estimate of the need for a service (e.g., day surgery) based on a foreign population's (i.e., another province or country) experience with that particular service, several conditions must be met. It is essential that the foreign population be similar to the population being studied in terms of the age-sex distribution and other socio, cultural and demographic factors. Alternatively, standardization methods can be applied to minimize demographic differences which may exist among different populations. Also, the foreign population must have an almost fully established day surgery service. It appears that no such ideal system exists; therefore, one must resort to examining a population which is relatively advanced in comparison to the current study population. Difficulties also arise due to the data collection and recording methods which may differ among regions, provinces, and countries.

For example, if the coding methods used to record surgical operations differ between the prototype and the study populations, then some biases will be introduced. Hence, one must carefully study and select the foreign population which is to be used as a prototype in order to reduce the biases which may exist.

## 3.2 BASIC MODEL

### 3.2.1 CONCEPTUAL MODEL

Conceptually, the misutilization of services in terms of patients using surgical services at inappropriate locations, can occur at all three service modes proposed earlier in Figure I. Overall, the major thrust of this study focuses on estimating the potential number of surgical cases which are suitable for day surgery and which are presently done through the hospital inpatient mode.

For any given surgical procedure, within a defined service population, the total number of day surgical procedures required may be conceptualized as shown in equation (1)

$$Y = C+(P*H)+E1+E2 \qquad (1)$$

where

Y = the potential number of day surgery services(DSL)

C = the amount of surgery currently done on a day visit basis

H = the amount of surgery currently done on an inpatient basis

P = the proportion of hospital surgery which could be done on a day surgery basis(DSP)

E1 = random components due to hospital inpatient type of surgery done as day surgery, day surgery done at the office, or office type of surgery done as day and/or inpatient surgery

E2 = random components due to other intangible factors such as the recording of data, physicians' attitudes, patient preference, and demographic variables.

The ultimate task in this study is to estimate the appropiate P values for each operation or operation category. Obviously, the P value is dependant upon the risk and complexity of the various surgical procedures. Since there is no acceptable measure of case complexity, one may use LOS as a proxy. This implies that P is a function of hospital LOS. Due to lack of data which can be used to examine the lower end of the continuum shown in Figure 1, i.e., surgery which can be performed in a physician's office, these cases will be treated as random components in the analysis. Equation (1) identifies this as E1, which

includes cases done in a hospital which can be performed in a physician's office and visa versa. If the random errors are of a cancelling nature the average value of these errors approaches zero. Hence, it is reasonable to assume, for the purpose of this study, that the expected values of E1 and E2 will be relatively insignificant and average out to zero. Although it is feasible to set up a prospective study, to investigate the whole spectrum of surgical services, it is beyond the scope of this thesis. Further discussion is required to explain the applicability and the limitation of using hospital LOS in this study.

### 3.2.2 HOSPITAL LOS

One may be reasonably confident in assuming that some of the surgical cases admitted to hospitals could be served on a day surgery basis. The existence of appropiate day surgery programs and facilities may eliminate some of the short LOS inpatient cases. Therefore, the assumption stipulates that all patients who had a very short LOS are prime candidates for day surgery.

The use of LOS as a criterion for estimating potential day surgery cases has limitations. For example, if one adopts a LOS of 2 days as a criterion, it is very likely that there are cases with a LOS greater than two days which can be performed on a day surgery basis. Similarly, there are cases with a LOS of one or two days which require hospitalization. When using a large data base it is

reasonable to expect that some cases in these two situations would cancel each other. Without empirical evidence to establish the criterion in terms of LOS, the decision to select a cut-off point along the LOS distribution for a particular operation category is subject to criticism.

Conceptually, LOS is a continuous variable but since it is recorded in whole numbers, one must consider LOS as a discrete variable. Figure 2, illustrates an example of a distribution of case frequency over LOS for all discharged cases in Alberta which required at least one surgical operation for the year 1978. Figure 3 presents a conceptual model of observed LOS cases decomposed into two distributions, suggesting potential error of over- and under-estimation

The underlying model assumes that the frequency distribution illustrated in Figure 2 may be decomposed into two separate distributions as shown in Figure 4 (day surgery type) and Figure 5 (hospital inpatient type). The actual numbers shown in Figures 4 and 5 are unknown and, therefore, represent hypothetical distributions.

Figure 4 indicates that the day surgery type cases are more concentrated on the short side of the LOS scale and that the number of day surgery cases will decrease as LOS increases. Therefore, equation (1) may be rewritten as:

$$Yi = Ci + \sum_{j} Pij * Hij + E1i + E2i \qquad (2)$$

where

**Figure 2**

**Frequency distribution of discharges involving surgical operations over LOS (1978) in Alberta**
**Total of discharges: 246,393**

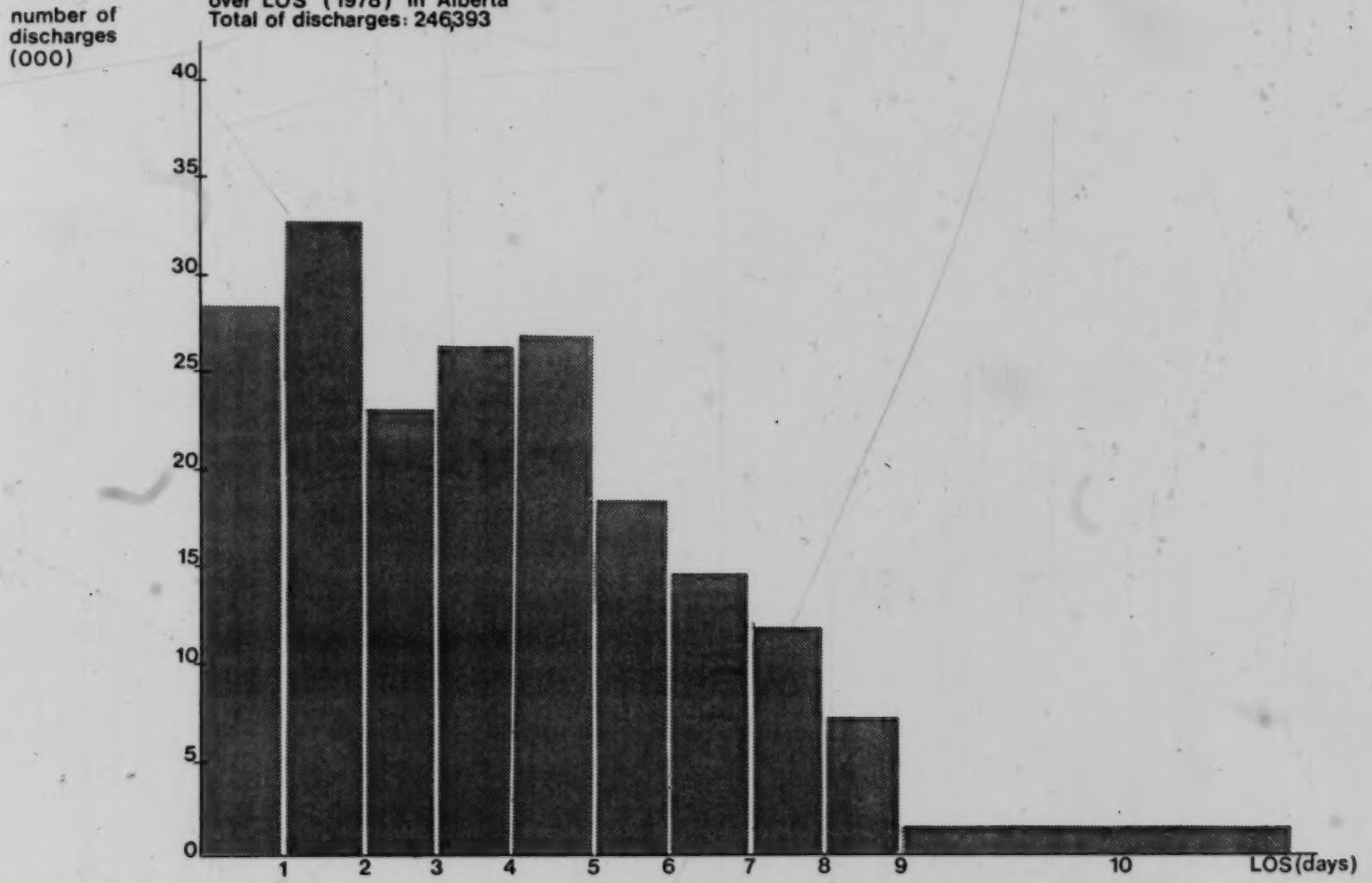


**Figure 3**

**Hypothetical frequency distribution of potential day surgery cases over LOS**

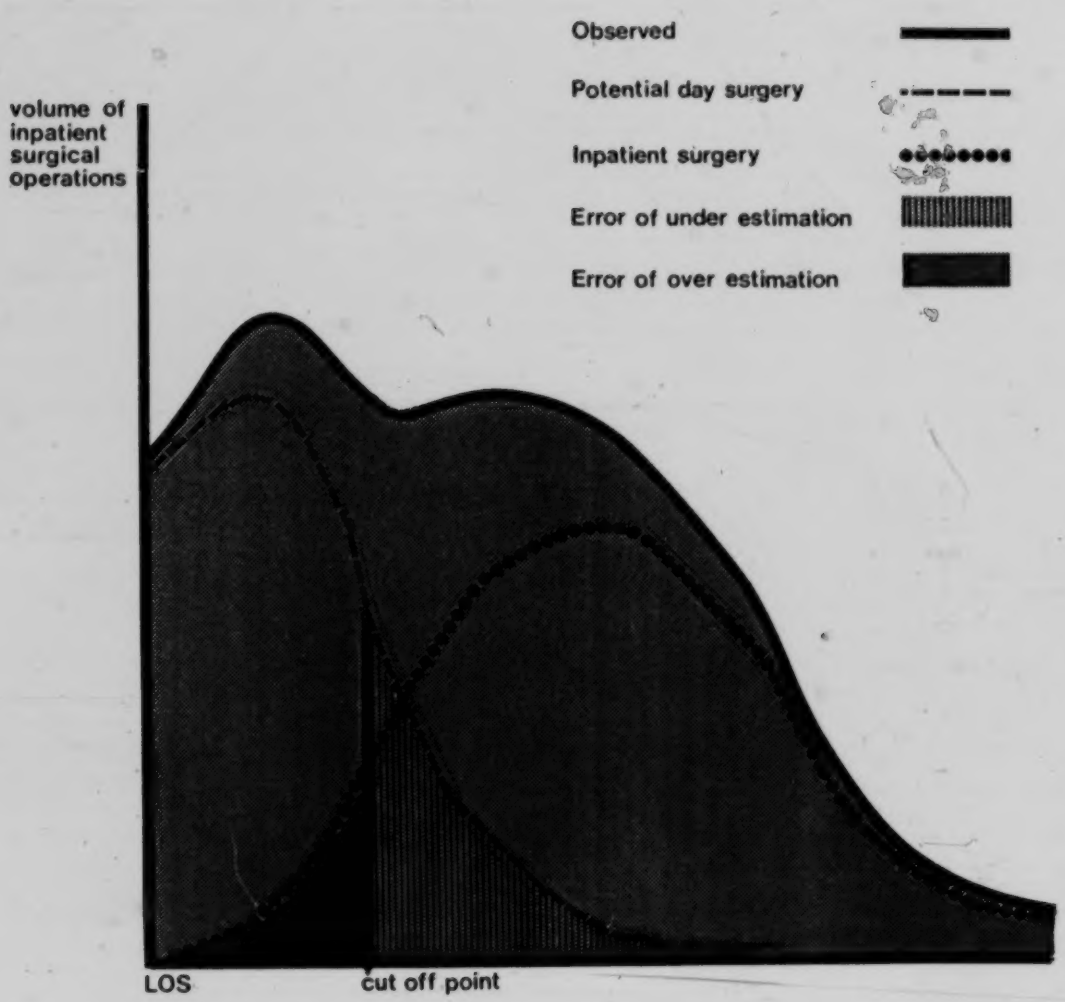


**Figure 4**
**Hypothetical frequency distribution of day surgery cases over LOS**

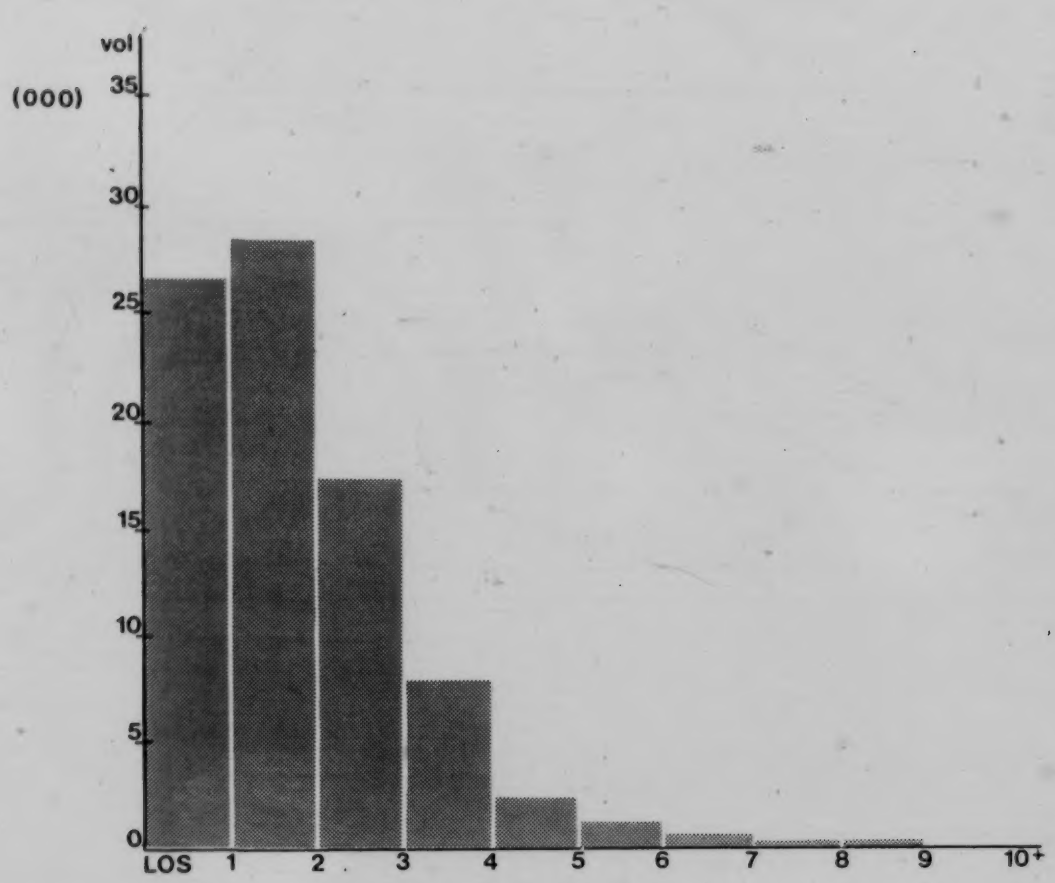
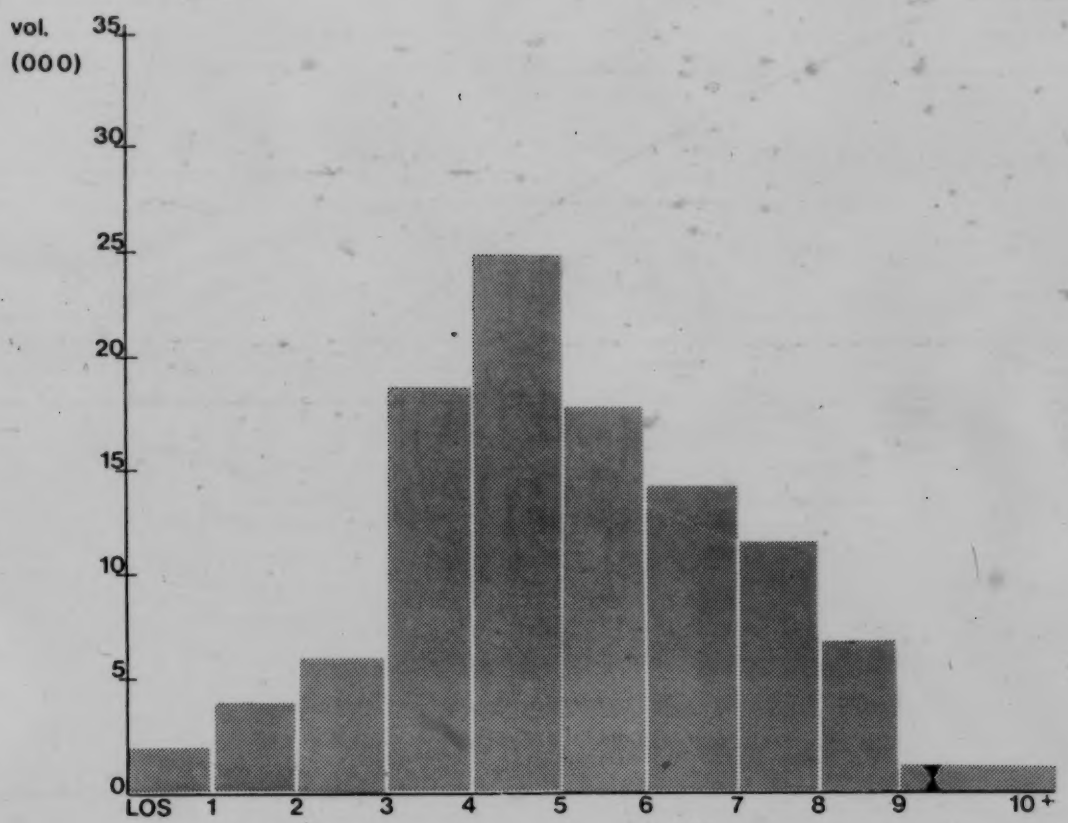


**Figure 5**
Hypothetical frequency distribution of surgical operations requiring inpatient care (day surgery type removed)



Yi = the potential number of day surgery services for procedure i (procedure specific DSL)

Ci = the amount of surgery currently done on a day visit basis for procedure i

Hij = the frequency of procedure i with LOS j currently done on an inpatient basis

Pij = the proportion of hospital inpatient surgery of procedure i with LOS j which could be carried out on a day surgery basis(DSP)

E1i = random components due to hospital inpatient type of surgery done as day surgery, day surgery done at the office, or office type of surgery done as day and/or inpatient surgery

E2i = random components due to other intangible factors

i = a specific procedure or operation category

j = the LOS as measured in number of days.

From the above discussion, it appears reasonable to assume that Pij is a decreasing function of j for a given i, that is the likelihood for a surgical procedure to be performed on a day surgery basis is greater when j = 1 than when j = 2 or 3.

The figures for Pij are unknown and must be estimated. However, the figures for Hij are usually known. Ultimately, the quality of "need" assessment will depend upon the quality of Pij estimated values and the simplified assumption that E1 and E2 are averaged out to zero. In the

following sections, the conceptual model which has been developed will be elaborated, modified, and applied under specific assumptions but, prior to that, some discussion regarding the source of data is needed.

### 3.2.3 SOURCE OF DATA

The hospital data base used in this study includes all separations recorded by Alberta's active care hospitals using the Professional Activity Study (PAS). This data base was supplied on computer tapes by the Alberta Department of Hospitals and Medical Care and consisted of PAS files for the years 1974 to 1978. Hence, unless otherwise stated, all tabulations of hospital LOS will be based on the five year experience. The advantage of aggregating the data is that the effects due to factors which might fluctuate from one year to another are reduced. Due to the high costs of handling large data files, a separate file was created which contained aggregated data of the PAS data files. The data file contained the number of all discharged cases for the years 1974 to 1978 for each primary operation code, tabulated according to the LOS values. This data file will be referred to as the hospital LOS data file.

To offset the loss of information due to the aggregation, a 5% sample was obtained from the 1978 PAS data file. Such a sample was needed to estimate the proportion of cases which were pediatric i.e., less than 14 years of age. Operations were coded with the H-ICDA coding system. This

classification system is organized according to body systems and not according to medical services such as plastic surgery, gynecology, ophthalmology etc.

## 3.3 ESTIMATION METHODS

This section discusses in some detail the methods used to estimate the need for day surgery services in Alberta. Using some combinations of the basic strategies discussed in section one of this chapter, and the LOS hospital data, three methods have been developed and are presented in this section.

### 3.3.1 METHOD I; DIRECT USE OF LOS

A prospective or retrospective assessment/ classification study would provide estimated values for certain variables in equation (2); however, this was beyond the scope of this study. As a result, based on the fact that there is no empirical data available, the investigator must make certain simplifying assumptions and use some approximate measures to estimate the need for day surgery services. The direct use of LOS is one approach. As mentioned earlier, the underlying assumption included in the model is that all patients who have a very short LOS are prime candidates for day surgery. If one refers back to Figure 3, one would note that the upper tail of the day surgery distribution overlaps with the lower tail of the

inhospital case distribution over LOS. This suggests that for a suitable LOS value used as the cut-off point, cases which were missed and which were inappropriately labeled as suitable candidates for day surgery may cancel out. Despite the fact that there is no natural cut-off point or LOS value which would divide the distribution in Figure 2 into two parts in a fashion similar to that described above, it appears that LOS=2 and LOS=3 are reasonable options to separately investigate. Hence, the analysis will consist of two separate analyses, using the above LOS values as a cut-off point.

Excluded from this analysis were cases where the patient's age was less than 1 or greater than 64 years. These cases were omitted because of the higher risk involved in performing day surgery on the very young and the elderly. This range was determined after examining some of the comments from the physician questionnaire as well as reviewing some of the protocols presently being used to select day surgery patients. It is very possible that some patients over 65 years of age are capable of undergoing a day surgery operation. Similarly it is also probable that some of the patients who are less than 65 years of age are not suitable candidates for day surgery. In this study it is assumed that these two situations are random and cancel each other.

For the purpose of this study, certain restrictions must be placed on equation (2), such as $E1i = E2i = 0$ and $Ci$

= 0. Hence, equation (2) now becomes

$$Yi \equiv \sum_j Pij*H'ij \qquad (3)$$

where H'ij represents all hospital inpatient surgical cases where patients' ages ranged between 1 to 64 years inclusive. The justification for letting E1i = E2i = 0 was discussed earlier. Ci is set to equal zero because of the lack of a data base which can be used to review day surgery operations performed in Alberta hospitals. This, however, will not cause any problem since the investigator is interested in the need for additional day surgery services beyond what is currently recorded as such. The Ci values are also expected to be small due to the fact that many hospitals record day surgery as an inpatient case with one day LOS. Although it is not possible to determine how many hospitals followed this practice in 1974-1978, there is reason to suspect that the majority of Alberta hospitals did. This means that some Hij cases are actually day surgery cases recorded as a one day LOS.

Since LOS is the criterion for determining service need for day surgery, the Pij values become the following (assuming LOS = 3 is used as a criterion):

$$Pi1 = Pi2 = Pi3 = 1.0 \text{ and } Pij = 0 \text{ if } j \geq 3$$

The implication is that the proportion or probability of all surgical cases for the i procedure is equal to one if LOS = 1, 2, and 3. Beyond this point, the probability is zero.

As a result of the above, equation (3) condenses to

$$Yi \equiv \sum_{j=1}^{3} Hij \qquad (4)$$

Therefore, the task of estimating Yi, the number of day surgery services required for the i procedure, becomes a relatively simple one.

To transform the results obtained from the above formula into patient days, one must perform the following summation:

$$Zi \equiv \sum_{j=1}^{3} j*Hij \qquad (5)$$

where Zi represents the potential patient days saved (PDS) by day surgery. If one wishes to transform patient days into bed numbers, the number of patient days is divided by an appropriate figure of occupancy rate. The same steps apply to the analysis when using LOS = 2 as a criterion, except that

$$Pi1 = Pi2 = 1.0 \text{ and } Pij = 0 \text{ if } j \geq 2$$

The procedures and/or operation categories (i) used will be discussed later in this chapter.

### 3.3.2 METHOD II; EXPERT OPINION

Admittedly, Method I is very simplistic and descriptive, that is if the assumptions are valid, the number of cases estimated would be served on a day surgery basis. An alternative method is a normative one based on

experts' opinions. Estimates were gathered by means of a physician questionnaire survey. Details about the survey design will be presented in the next section. Although the Delphi method would have been another alternative approach, it was beyond the scope of this study due to time restrictions.

The ideal situation would be to determine for each operation category the proportion of cases which could be done on a day surgery basis i.e., Pij, for each LOS value e.g., LOS = 1,2,3,etc. It is evident that the proportion would decrease as LOS increases. However, asking physicians to estimate a proportion for each LOS value would be very difficult, and not practical. It would also require a much longer and more detailed questionnaire thus risking a greater non-response.

An alternative approach is to have physicians estimate the proportion of all i type procedures which are currently operated on an inpatient basis, but could be performed on a day vist basis. Therefore, Pi rather than Pij are used in this method. Hence, equation (2) is slightly modified so that:

$$Yi = Ci + Pi \sum_{j} Hij + E1i + E2i \qquad (6)$$

Following the same argument as in the previous section where Ci = 0 and Ei1 = Ei2 = 0,

$$Yi \equiv Pi \sum_{j} Hij \qquad (7)$$

where Pi represents the proportion of all hospital inpatient surgery which could be carried out on a day surgery basis for a particular operation category i. Moreover, to transform the findings obtained from equation (7) into patient days, the number of estimated day surgery cases (Yi) will be identified and distributed in a fashion such that they will represent the short end of the LOS distribution for hospital inpatient surgical cases, excluding patients under one and over sixty-four years of age (H'ij). Therefore, the number of potential patient days saved can be estimated according to equation (8):

$$Zi \equiv \sum_{j} j*k*H'ij \qquad (8)$$

where K represents the proportion of cases in LOS j (for the i procedure) which are identified as the short LOS cases.

### 3.3.3 METHOD III, BRITISH COLUBIA EXPERIENCE

Interprovincial differences in hospitalization rates can be used as a proxy measure to indicate whether a particular service is being over- or under-utilized. The difficulty in using these rates for comparison purposes is that both demographic factors, such as age-sex distributions in a region, and the non-demographic factors, such as the availability of hospital facilities and physicians, influence the rates. Age-sex differences obviously do account for some of the variation in hospitalization rates; however, in Alberta, it appears that the non-demographic

factors, such as bed availability, account for the majority of variations (Soderstrom, 1978).

It was shown (Table 1) in the previous chapter that Alberta was among the provinces with the lowest rates per 1,000 persons experiencing day surgery visits for the year 1976. Concurrently, Alberta recorded the highest hospital inpatient surgical rate (HISR) in Canada. Although the possibility of unnecessary surgery exists, it is most likely that the high HISR recorded in Alberta is a function of the lack of day surgery services and the large supply of acute care beds. In 1974, Alberta general hospitals had a rate of 6.8 beds per 1,000 persons compared to the national average of 5.7 beds (Soderstrom, 1978). One may hypothesize that many of the minor surgical operations, which could be classified as day surgery operations, were being performed on an inpatient mode due to the availability of inpatient beds for such cases. Assuming that the above supposition is true, this method will attempt to estimate the volume of Alberta hospitals' inpatient surgical separations which could potentially be classified as day surgery cases. This will be done by adjusting Alberta's utilization of hospital inpatient surgical services to that of British Columbia, and comparing the adjusted volume to the actual volume recorded in Alberta hospitals. The alternative approach, which is to compare the adjusted utilization rates for day surgery, was excluded due to data limitations.

As noted in the literature, British Columbia has made substantial progress in the development of day surgery services. Their province-wide plan for day surgery is supplemented by an adequate reporting mechanism which provides very useful statistical data. Although one can maintain that day surgery services in British Columbia are perhaps not fully utilized, the British Columbia experience may still be considered a prototype for Alberta to use as a basis to measure gaps as well as the future potential in this area.

The computations to derive the potential volume of hospital inpatient surgical separations which could be done on a day surgery basis are as follows:

$$Yi = Hi - H'i \qquad (9)$$

where

$$H'i = HISRi * Pa \text{ and } HISRi = Bi/Pb$$

Yi = number of potential day surgery services for procedure i

Hi = hospital separations with surgical operations in Alberta

H'i = adjusted number of hospital separations with surgical operations in Alberta

HISRi = the hospital inpatient surgical operations rate for British Columbia

Bi = hospital separations with surgical operations in British Columbia

Pa = Alberta's census population

Pb = British Columbia's census population

i = to the operation category.

The underlying assumption with this method is that the differences between Hi and Hi' (positive differences) represent relatively minor surgical cases which could be done on a day surgery basis. If the HISR for British Columbia reflects the true inpatient surgery need, with few day surgery cases being treated by the inpatient mode, then the assumption above may be reasonably accurate. Patient day figures are obtained in a way identical to Method II. The volume of hospital separations with surgical operations in Alberta (Hi) and in British Columbia (Bi) were derived using yearly averages for the 1974-1978 period and the 1975-1977 period, respectively. Since the middle point for the above is 1976, census figures for 1976 were used in this analysis. Ideally, age-sex specific rates are desireable, however, these were not available. The sex distribution is similar between the two provinces; however, the age distribution varies. Alberta has a much larger proportion of its population in the 0 - 29 age category, whereas British Columbia has a larger porportion of its population in the 45 - 65 age category (Statistics Canada, 1977). Hence, one would expect Alberta to have a larger proportion of surgery done on a day basis, since elderly patients are less disposed to care on a day surgery basis. However, one may also argue that British Columbia generally needs more

surgical services because of its elderly population. In this study it is assumed that, overall, the two populations are reasonably similar.

One limitation of this approach is the data problem associated with the operation classification system used in British Columbia and Alberta. In Alberta, the classification of operations is based on the second edition of the Hospital Adaptation of the International Classification of Diseases (H-ICDA) published by the Commission on Professional and Hospital Activities (CPHA) in 1973. In British Columbia, the classification of operations is based on ICDA-8 which differs from the H-ICDA system. Hence, the analysis will be limited only to those classes of operations which are reasonably similar in both classification systems.

### 3.4 PHYSICIAN SURVEY

This section presents the design of physician surveys. As noted earlier, the results obtained by the physician questionnaire were used in Method II. The mail questionnaire method was chosen for several reasons: (a) the mail questionnaire could cover vast geographical regions at a low cost and in a short time period, (b) physicians are very busy individuals and a mail questionnaire allows them to respond during less busier times, and (c) physicians are highly educated individuals which makes the use of a mail questionnaire more appropriate.

### 3.4.1 SURVEY DESIGN

The purpose of the physician survey was two-fold: (a) to measure the opinions and attitudes of physicians on day surgery services in general, and (b) to provide estimates indicating the proportion of inpatient surgical cases which could potentially be done on a day visit basis.

The target population consisted of physicians from a selected number of specialties. The specialties were selected according to the physicians' likelihood of being involved with day surgery. These specialities were as follows: general surgery, urology, obstetrics and gynecology, orthopaedics, ophthalmology, plastic surgery, otolaryngology, pediatrics, anaesthesiology, neurosurgeons, and internal medicine. General practitioners were also included in the study.

A list of physicians representing the target population was obtained from the Alberta Medical Association. The sampling frame consisted of 2,320 practising physicians registered with the College of Physicians and Surgeons of Alberta as of September, 1981. Table 6 presents the number of physicians in each specialty, the raw weight which is the reciprical of the sampling fractions, and the number of

TABLE 6

Group Sample and Weights

| Group Name | Stratum h | N | $n_h$ | Raw Weight (RWGT) $\frac{N_h}{n_h}$ |
|---|---|---|---|---|
| Anaesthetists | 1 | 118 | 118 | 1 |
| General Surgeons | 2 | 149 | 149 | 1 |
| Gynecologists | 3 | 107 | 107 | 1 |
| Pediatricians | 4 | 109 | 109 | 1 |
| Neurosurgeons | 5 | 12 | 12 | 1 |
| Ophthalmologists | 6 | 54 | 54 | 1 |
| Orthopaedic Surgeons | 7 | 59 | 59 | 1 |
| Otorhinolaryngologists | 8 | 27 | 27 | 1 |
| Plastic Surgeons | 9 | 20 | 20 | 1 |
| Urologists | 10 | 33 | 33 | 1 |
| Internists | 11 | 223 | 56 | 3.98 |
| General Practitioners | 12 | 1409 | 78 | 18.06 |
| TOTAL | - | 2320 | 822 | - |

h = group identification number, stratum
N = number of physicians in the target population
$n_h$ = number of physicians selected in the sample
RWGT = 1 / the sampling fraction

questionnaires that were sent to physicians in each stratum. An attempt was made to determine a sample size for each specialty so that the usable returns for each were as equal as possible. Due to the wide range in the number of physicians in each specialty, this was difficult to achieve without seriously reducing the sample size for each specialty. A systematic sample of physicians was selected for both the general practitioners and the internists; in other specialties, all names were selected (100% sample).

It was assumed prior to the survey that the response rate for all specialties and general practitioners would be 50% and 30%, respectively. An attempt was made to make the number of usable returns for both internists and general practitioners equal to at least 25, which was similar to other specialties. The sampling frame consisted of an alphabetical order of physicians names. The systematic sampling consisted of a questionnaire being sent to every eighteenth general practitioner and to every fourth internist. The sampling provided substantial cost savings since there is a large number of physicians practicing in both groups. Sampling was not undertaken in the other specialties for two reasons: (a) only a few physicians practised in the specialties, and (b) if a particular specialty was judged to be an important group because of its involvement with day surgery, then all physicians in that group were surveyed. The investigator of this study suspected that not all respondents would attempt to estimate

Pi values. Hence, to maximize the number of respondents who provided estimates, all physicians were selected for certain specialties even though a systematic sample may have been feasible.

### 3.4.2 QUESTIONNAIRE DESIGN

The structure of the questionnaire consisted of four sections (see Appendix D). Section A was designed to obtain some background information from the physicians surveyed. Sections B and C, which were designed to measure the opinion and attitudes of the physicians, were to be answered by all respondents. Section D was intended to gather estimated proportions (EP) for an array of operation categories which differed, depending on the specialty.

The content of the questions was identified by reviewing pertinent articles in the literature, by reviewing previous physician questionnaires, and through discussions with physicians who were knowledgeable about day surgery (Masson, 1981; Allin, 1981; Moore, 1981; Bayda, 1977; Cartwright & Ward, 1968; Garraway et al., 1978).

A pre-test was conducted prior to the survey. The pre-test consisted of a draft copy of the questionnaire which was sent to eight physicians representing various specialties.

### 3.4.3 SURVEY PROCEDURE

Survey questionnaires were mailed on October 15, 1981. A covering letter and a stamped, self-addressed return envelope were enclosed with the questionnaire. In order to send a follow-up letter to the non-respondents, a serial number was placed on the questionnaire. The follow-up letter was sent on November 16, 1981. A copy of the original questionnaire was sent along with the follow-up letter. The closing date for receiving responses was December 21, 1981.

### 3.4.4 DAY SURGERY PROFILES

Day surgery profiles (DSP) represent the EP of hospital inpatient surgical cases for a given operation which could potentially be done on a day visit basis. The profiles were derived from the individual EP obtained from the physician questionnaire. The DSP are identified as the Pi variable in equation (3) discussed in the previous section. Profiles were estimated for various operation categories. Anticipating the possible difficulty in obtaining a single EP for each operation category, minimum and maximum estimates were requested instead of a single average figure.

The criteria used to determine which operation categories to include in section D of the questionnaire, as well as how broad those categories were to be, were somewhat subjective. The selection of categories was based primarily on a retrospective review of the hospitals' surgical data to determine which operation categories were frequently

performed on a short LOS basis. Also, certain categories which were frequently cited in the literature were considered. To obtain an appropriate response rate an attempt was made to limit the questionnaire to a reasonable length and, thus, to a reasonable amount of time required to answer all of the questions.

Each specialist, with the exception of anaesthestists, pediatricians, internists, neurosurgeons, and general practitioners, was asked to provide EP for specific operation categories within their specialty. The exceptions were made because the general trend is that the doctors in these specialties are not actively involved with day surgery. All physicians were, however, given the opportunity to provide EP for three broad operation categories or add any other specific procedures they wished to estimate.

The classification of operations used for this study was based primarily on the second edition of H-ICDA published by CPHA in 1973. The surgical operations listed in section D are classified according to the H-ICDA so that the estimates obtained from section D could be applied directly to hospital LOS data for analysis in Method II, which uses Alberta hospitals' surgical utilization data classified according to the H-ICDA system. Appendix D lists the operation categories sent to the respective specialties.

The measurement limitations of using any classification system for operations stem from the lack of an exhaustive and exclusive set of categories on which virtually all

physicians would agree. The fact that not all physicians have been exposed to the majority of all possible types of procedures within each operation category may cause substantial variations in the EP. The use of an aggregate measure, however, should have the effect of reducing variations. It is important to note that the H-ICDA classification system is based on body systems (e.g., surgery performed on the musculoskeletal system) and not on the type of surgical services (e.g., orthopaedic surgery). For example, orthopaedic surgery usually refers to surgery performed by an orthopaedic surgeon; however, some of the surgery performed on the musculoskeletal system may not necessarily be done by an orthopaedic surgeon. Although the example mentioned above refers to similar types of surgical operations, the classifications are not necessarily identical.

### 3.5 HOSPITAL SURVEY

The main objective of conducting the hospital survey was to obtain some factual information regarding the current status of day surgery services in Alberta's active treatment hospitals. As was noted in the literature review, the existing information on day surgery services in Alberta appears to be incomplete and it was expected that the survey results would provide some supplementary information.

### 3.5.1 SURVEY DESIGN AND PROCEDURES

The target population consisted of 127 active treatment hospitals (i.e., general, federal, and contract) in Alberta and all were included in the survey. The questionnaires were mailed on October 14, 1981. The questionnaires were addressed to the chief executive officers. A serial number was placed on the questionnaire in order to identify the hospitals which responded. A covering letter and a stamped, self-addressed return envelope was enclosed with each of the questionnaires. The closing date for receiving responses was December 21, 1981.

### 3.5.2 QUESTIONNAIRE DESIGN

The content of the questionnaire was identified by a review of literature and by information gathered from a field visit to the day surgery unit of the Calgary Foothills Provincial General Hospital. As noted earlier, one of the difficulties in assessing the status of day surgery services in Alberta stems from the lack of a common definition of day surgery. There appears to be a wide variation in interpreting what is meant by a day surgery program or service.

Day surgery was defined in chapter one in terms of the time frame of the patients' LOS for surgery. Such a definition, however, is not adequate to provide guidelines for establishing a day surgery program. Eventually, the definition of day surgery should consist of three

components:

1. The time frame which explains the time period between admittance and discharge of day surgery patients e.g., 24 hours.
2. The protocal for selecting both procedures and patients appropriate for day surgery.
3. The types of services required to establish a day surgery program (i.e., types of pre- and post-operative care services).

The resources, in terms of physical facilities and the staff required, would be a function of the above components.

One of the main thrusts of the hospital questionnaire was to obtain general information about the sophistication level of the various day surgery programs in Alberta hospitals by reviewing the existing day surgery programs and services in terms of the components mentioned above. More specifically, the questionnaire was designed to:

1. Determine which hospitals offer day surgery services;
2. Acquire a general idea of the growth and sophistication of the various day surgery programs;
3. Obtain a list of day surgical procedures which are performed in each hospital and an outline of the protocal for selecting day surgery patients; and
4. Determine how day surgery cases are recorded by the hospitals in their patient information system.

A copy of the questionnaire is included in Appendix E.

## 3.6 SUMMARY

The major thrust of this study focusses on the examination of surgical services occurring at the inpatient mode for the purpose of estimating the potential volume of inpatient surgical cases which could be transferred to a day surgery program. Three methods of estimation were developed: (a) the direct use of LOS, (b) the use of expert opinion, and (c) the use of a foreign population's experience with day surgery. Primary surgical operation codes, which were recorded onto the PAS province-wide data files for the years 1974 to 1978, formed the basis for investigating surgical services; this was supplemented by the information gathered through two mail questionnaire surveys. The physician questionnaire provided pertinent information for estimating the need for day surgery using Method II. In addition, the physician questionnaire provided a general idea of physicians' attitudes towards the concept of day surgery. The hospital questionnaire was developed to gather basic information regarding the current status of day surgery services in Alberta.

The results of the analysis are presented in the next chapter. Along with the results, a discussion regarding limitations, assumptions, and implications which the findings will have for planning will be presented.

# CHAPTER 4

## RESULTS AND DISCUSSION

This chapter examines the results obtained from the analysis described in Chapter III. The results will be presented according to the following sequence: (a) hospital survey, (b) analysis of the surgical LOS data, and (c) physician survey. The presentation and discussions of the results of a, b, and c will be followed by a need assessment of day surgery services in Alberta.

### 4.1 HOSPITAL SURVEY

The information concerning the current status of day surgery services in Alberta was obtained by means of a hospital survey. Replies were received from 112 out of the 127 (80%) active treatment hospitals in Alberta. The majority of the hospitals which did not participate in the survey were small as measured by their number of beds (under 50 beds). The data analysis was divided into two sections: (a) those hospitals which presently provide day surgery services, and (b) hospitals not providing any day surgery services. The results will be presented accordingly, and the percentage figures shown will be based upon the total number of responding hospitals in each section, unless otherwise stated.

### 4.1.1 HOSPITALS WITH DAY SURGERY SERVICE

It was the investigator's intent to design the survey in an exploratory manner in order to obtain a general idea of how the hospitals were perceiving what a day surgery program should be, but more importantly, to gain some knowledge of the present day surgery services in Alberta.

Although the development of day surgery in Alberta has been a recent event, it appears that the concept has become popular and has spread rapidly. For example, 35 hospitals out of 60 hospitals (58%) offering some organized form of day surgery services stated that such a service started within the last five years and 49 hospitals (82%) indicated that such a service started within the last ten years. Appendix F contains the list of hospitals which provide some organized form of day surgery services.

The majority of hospitals involved with day surgery services do not have either a list of surgical procedures performed on a day basis, or a formal protocol for selecting patients. Twenty-four hospitals (42%) indicated that they had a list of surgical procedures performed on a day basis; sixteen hospitals included the list with the returned questionnaire. The number and type of procedures varied among the hospitals. Only 14 hospitals indicated that they had a protocal for selecting day surgery patients. Appendix F indicates that the larger size hospitals tend to have such information.

Day surgery services offered in hospitals can usually be classified according to three types of procedures: (a) surgical operations requiring general anaesthetics, (b) surgical operations requiring local or regional anaesthetics, and (c) diagnostic and medical procedures requiring some local anaesthetics or sedatives.

Sixty-five percent of the hospitals indicated that the most frequent type of day surgery procedures performed required general anaesthetics. Twenty percent ranked surgical procedures with local or regional anaesthetics as the most frequently performed and 15% ranked diagnostic and medical procedures as the procedures most frequently performed on a day surgery basis. Further analysis revealed that larger hospitals (100 beds and over) tend to rank surgical operations requiring general anaesthetics as the most frequently performed. Surgical operations requiring local and regional anaesthetics, and medical diagnostic procedures are rated as the most frequently performed procedures by smaller hospitals (under 50 beds). In regards to the quantity of day surgery operations performed, 60% of the respondents reported that the volume is under 500 cases per year. As expected, Appendix F shows that the smaller type hospitals do very little day surgery (less than 100 cases per year).

The vast majority of day surgery services in Alberta hospitals share the whole spectrum of hospital inpatient physical facilities and services. However, large size

hospitals tend to have some facilities and services geared solely to the day surgery program. A space designated as an observation area for day surgery patients exists in 16 hospitals (27%). Only three hospitals indicated that they had a separate operating room (OR) for day surgery. Four hospitals reported that they had separate admitting services for day surgery patients.

The majority of hospitals (95%) utilized the main operating room to operate on day surgery patients. Twenty-eight percent of the hospitals also indicated that they used the emergency OR facilities and 13% indicated that they used the outpatient department facilities. The majority of hospitals which used the emergency and outpatient facilities to perform day surgery operations were smaller size hospitals.

As mentioned in the literature review, pre- and post-operative care services are important components of a successful day surgery program. Eighty-five percent of all hospitals indicated that physicians provided pre-operative instructions to the patients and 75% indicated that the hospital also provided pre-operative instructions. Some comments expressed the concern that not all patients receive appropriate instructions due to lack of well organized pre-operative services.

In the assessment of the type of post-operative services available in day surgery, 82% of the hospitals reported that patients are given instructions to contact the

hospital, 12% of the hospitals reported that they provided ad hoc post-operative nursing visits, and 15% of the hospitals reported that a 24 hour 7 days a week telephone contact system was available. No day surgery program included a compulsory home nursing service. Other types of post-operative care services offered are as follows: (a) patients are told to contact the physcian's office (10 hospitals), (b) patients receive recalls for further re-assessment and treatment (3 hospitals), and (c) patients remain in hospital a minimum of 4 hours and are discharged only after seeing the physician.

The following lists the remaining relevant findings:

1. Twelve hospitals (20%) reported having a nursing staff assigned to the day surgery program.
2. Twenty hospitals (33%) are currently reporting day surgery as a one day LOS inpatient services.
3. Presently, approximately 85 day surgery beds exist in Alberta hospitals of which 35 belong to the Foothills hospital in Calgary. However, only three hospitals had assigned beds exclusively for the purpose of day surgery. The remaining hospitals used mostly ICU, medical, or surgical inpatient beds, and a few hospitals utilized emergency and outpatient beds, and/or stretchers.
4. It appears that the deficiencies of the current day surgery programs, as seen by the hospitals, consisted of the following: (a) a lack of guidelines to indicate what

a day surgery program should consist of, (b) a lack of adequate facilities such as space, beds, and equipment, and (c) a lack of medical and nursing staff. Appendix G provides an edited version of the comments.

### 4.1.2 HOSPITALS WITH NO DAY SURGERY SERVICES

Fifty-two out of the 112 hospitals (46%) indicated that they do not provide any day surgery services. The majority of the hospitals not providing any day surgery services (79%) were in the category of under 50 beds.

Several reasons were given to explain why no day surgery services were offered by these hospitals. Eighty-three percent of the respondents indicated that the government does not provide hospitals with financial incentives to develop such a service. Furthermore, 70% felt that day surgery was not a popular concept among the medical staff. Other problems are the lack of physical facilities in hospitals for providing day surgery services, the lack of adequate equipment and anaesthetic facilities, and the lack of medical staff. Appendix G provides an edited version of the comments explaining why day surgery was not offerred.

It is evident that Alberta has experienced a significant growth of day surgery services during the last five years. However, this growth has been achieved without a concrete province-wide policy for day surgery services. All indications point to the fact that this growth will continue in the future. Seven hospitals indicated that a day surgery

program will be included in their expansion plan.

### 4.1.3 CONCLUSIONS

The sophistication and organization of day surgery services appear to vary widely among Alberta hospitals. Only a few hospitals seem to have well established programs with a protocol for selecting day surgery patients and/or have a list of procedures presently done as day surgery. In addition, the majority of hospitals do not have dedicated facilities for day surgery services. Although, a completely autonomous day surgery unit is not viewed as being absolutely essential, certain facilities such as post-operative observation areas are considered to be somewhat necessary. One may speculate that the degree to which the facilities are dedicated will depend upon the type and size of the hospital. It may well be that the apparent absence of adequate day surgery facilities in Alberta hospitals is causing or forcing the performance of potential day surgery operations on an inpatient basis.

As in any other health programs, the planning of day surgery services should be based on appropriate information. One of the most urgent requirements is to develop a province-wide data base recording all day surgery procedures under a common and consistent standard. A data base is necessary so that the day surgery activity can be monitored. Monitoring can be used to help ensure that day surgery will be a substitute for inpatient surgical services, and not an

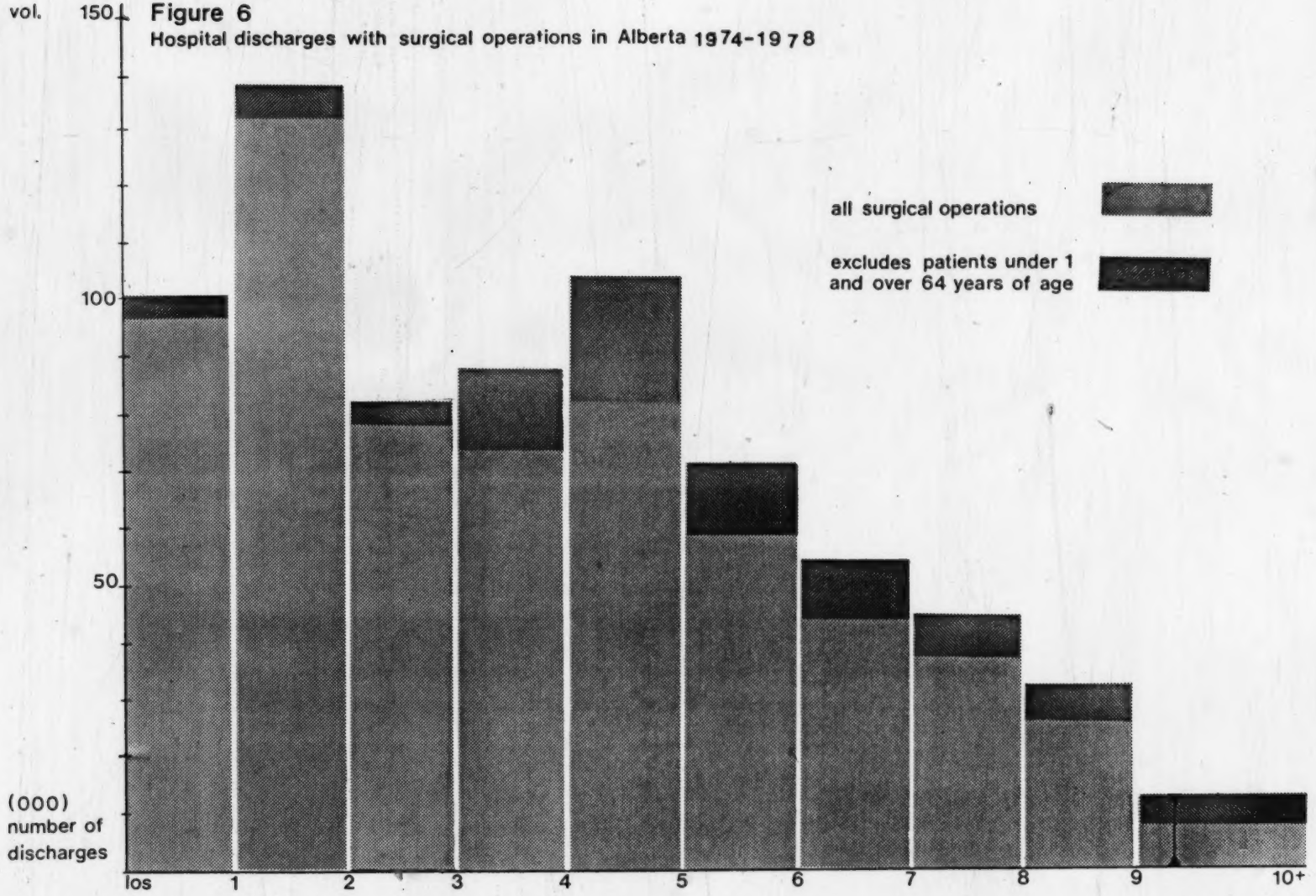
add-on for services which could be performed in a physician's office.

## 4.2 HOSPITAL SURGICAL DATA

The surgical data file used for the analysis of this study consists of 1,170,263 discharged cases with a primary operation code. These cases accounted for 10,406,762 patient days during 1974 - 1978, with an ALOS of 8.9 days. Of the total number of discharges, 886,075 (76%) had primary operations involving a surgical procedure. The remaining cases consisted of diagnostic and nonsurgical operations. Excluding patients under 1 and over 64 years of age, discharged cases with a primary operation accounted for 80% of all surgical cases and had an ALOS of 7.5 days. This decrease in ALOS suggests that the very young and the elderly patients undergoing surgery tend to require hospitalization for a longer period of time and therefore, are less likely to be suitable candidates for day surgery.

Figure 6 illustrates the distribution of case frequency over LOS for all primary surgical procedures during the five year period. The distribution excluding patients under 1 and over 64 years of age is also shown. Fourty-one percent of all surgical operations excluding patients under 1 and over 64 had a LOS less than or equal to 3 days. Hence, if LOS = 3 was used as a criterion for estimating potential day surgery cases, 41% of all inpatient surgical cases could have been

**Figure 6**
**Hospital discharges with surgical operations in Alberta 1974-1978**



performed on a day visit basis accounting for 119,000 patient days per year. However, a closer examination of more specific procedures clearly points out that the LOS distribution can vary significantly and is highly dependent upon the operational category. For example, Figures 7 and 8 present the LOS distributions of dilation and curettage (D & C) and hernia operations for cases excluding patients under 1 and over 64. Eighty-nine percent of all D & C(s) have LOS less than or equal to 3 days as compared to 27% for all hernia cases. As a final comment, the five year data should reasonably reflect the hospital inpatient surgical pattern in Alberta, and minimize or eliminate any fluctuations which may have occurred on a year to year basis.

## 4.3 PHYSICIAN SURVEY

This section summarizes the results obtained from the analysis for sections A (physicians' backgrounds), B (general attitudes of physicians towards day surgery), and C (physical facilities and sevices of day surgery programs) of the physicians' responses. The results obtained from section D of the questionnaire will be presented in the next section.

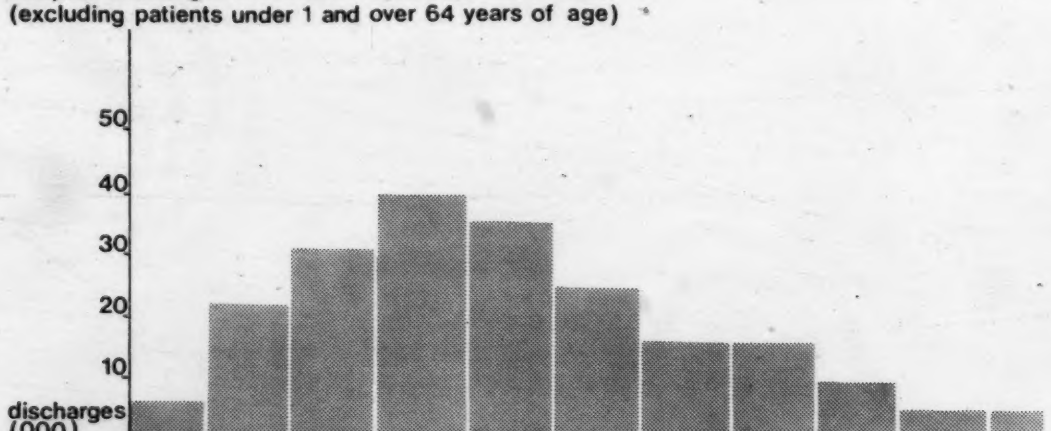
**Figure 7**

Hospital discharges with dilation and curettage of uterus 1974–1978
(excluding patients under 1 and over 64 years of age)

Total 55,646

**Figure 8**

Hospital discharges with hernia operation 1974-1978
(excluding patients under 1 and over 64 years of age)




Total 20,505

### 4.3.1 RESPONSE RATE

The analysis is based on the weighted number of physicians. This adjustment was required because the physician population was stratified and variable sampling fractions were used. More specifically, systematic sampling was done to select the internists and general practitioners; hence, each physician in these two strata represents more than one physician. In effect, this survey is based on a target population representing 2,320 Alberta physicians as of September 1981.

Out of 822 questionnaires mailed, 575 were returned. However, only 552 questionnaires were found to be usable. This represented a net response rate of 67%. A 51% net response rate was achieved prior to the follow-up. Table 7 illustrates the response rate for each group. The non-usable cases, which consisted of the deceased, those on sabbatical leave, the relocated physicians, and the physicians who stated they did not wish to reply, were considered as non-respondents. This lowered the gross response rate by 3%. Further to the above, some questionnaire items were incomplete which further lowered the response rate for individual items.

Although the response rate of 67%, is as high as one can expect from a mail survey, sampling biases due to non-response may exist, thus potentially invalidating the results. However, given that over 70% of plastic surgeons, anaesthetists, urologists, ophthalmologists, gynecologists

TABLE 7

Physician Survey Response Rates

| Physician Stratum | Number Mailed | Number of Returns | Response Rate (%) |
|---|---|---|---|
| Plastic Surgeons | 20 | 16 | 80 |
| Anaesthetists | 118 | 91 | 77 |
| Urologists | 33 | 24 | 73 |
| Ophthalmologists | 54 | 39 | 72 |
| Gynecologists | 107 | 76 | 71 |
| General Surgeons | 149 | 104 | 70 |
| Otorhinolaryngologists | 27 | 18 | 67 |
| Neurosurgeons | 12 | 8 | 67 |
| General Practitioners[1] | 78 | 50 | 64 |
| Orthopaedic Surgeons | 59 | 37 | 63 |
| Pediatricians | 109 | 60 | 55 |
| Internists[2] | 56 | 30 | 54 |
| Overall Response Rate | 822 | 552 | 67 |

[1,2]Systematic sampling was performed in these two strata

and general surgeons in Alberta responded, one can be reasonably confident that sampling biases were minimized. Moreover since in most cases the sample consisted of the total target population (excluding general practitioners and internists), one is at least assured that the results reflect the majority of opinions of interested physicians in the specialties surveyed.

### 4.3.2 PHYSICIAN BACKGROUND

Section A of the questionnaire focused on the physicians' backgrounds. The majority of the physicians (30%) belonged to the 45 to 54 year age group. They were followed by the less than 35 and 35 to 44 year age groups who each represented 24% of all respondents. In terms of years of medical practice, 44% stated that they had over 21 years of experience, 29% had 6 to 10 years experience, and 23% had 11 to 20 years experience.

Seventy-nine percent of the physicians described their medical practice as either a solo or a group practice. Furthermore, 6% described their pracice as a teaching practice and 3% as being primarily an administrative function. The physicians were asked to indicate their involvement (i.e., referral and/or performing day surgery operations) with day surgery services. Overall, only 8% indicated that they had no involvement with day surgery. Further investigation by specialty revealed that a large proportion of internists (37%), pediatricians (38.0%), and

neurosurgeons (25%) were not involved with day surgery. Thirty-nine percent of all physicians indicated that their involvement was on a referral basis, 31% indicated that they operated, 15% did both referrals and operations, and 7% indicated other involvement which essentially consisted of the application of anaesthetics. Pediatricians (50%), internists (47%), and general practitioners (52%) mentioned that their involvement was essentially on a referral basis. Moreover, 42% of general practitioners were involved in performing day surgery operations and 22% stated that they did both referrals and operations. Over 50% of all urologists, plastic surgeons, otorhinolaryngologists, and gynecologists tend to perform over 10 operations and/or referrals per month.

In conclusion, it appears that the majority of physicians have some exposure to day surgery and only a few physicians (8%) indicated that they have no involvement with day surgery.

### 4.3.3 GENERAL ATTITUDES OF PHYSICIANS TOWARDS DAY SURGERY

Ninety-seven percent of all physicians believed that some of the surgery patients currently admitted to hospital could receive the same quality of care in a day surgery unit. At the same time, 79% of the physicians perceived that their patients would prefer day surgery rather than inpatient care, with only 2% disagreeing.

Proponents of day surgery, frequently cited in the literature, state that day surgery provides a means of lessening much of the patients' psychological stress due to hospitalization. Seventy-four percent agreed that psychological stress would decrease, 10% disagreed, and 16% did not know.

When asked (Item B-4) whether day surgery implied a shift in medical responsibility for post-operative care to the providers of the community-based health services (such as practitioners and home care nurses), 59% of physicians agreed, 33% disagreed. Further analysis according to specialty indicated that a large proportion of all general practitioners (72%) felt that day surgery implies a shift in medical responsibilities, while the physicians in the remaining specialties tended to disagree with the statement.

It has often been assumed, that day surgery will result in a more effective use of the surgeon's time. Of the total physician responses, 65% agreed that it would be a more effective use of their time, 15% disagreed, and 20% did not know. These figures, though, vary substantially among the specialties. For example, 94% of the plastic surgeons agreed, whereas only 46% of the orthopaedic surgeons agreed. The remaining specialists fell between these two figures. It appears that the variation is a reflection of the differences in medical practice patterns which exist among the specialties. However, more research is needed to confirm this.

Often, the question arises whether all hospitals should provide day surgery services. In regards to this, 76% of physicians agreed that all hospitals should render day surgery services. Conversely, when asked whether day surgery services should be reserved only for hospitals with high occupancy rates, 86% of physicians disagreed.

A cross-tabulation analysis between the above two statements was done to obtain some measure of the internal validity of the questionnaire. One can hypothesize that if a physician felt that all active treatment hospitals should provide day surgery services, then he/she would not agree with the statement that only hospitals with high occupancy rates should render such services. However, 7% of physicians agreed with both statements. This result suggests that a few physicians were inconsistent in answering these two questions.

Day surgery implies that much of the caring process is done at the patient's home. Physicians were, therefore, asked (Item B-7) if they felt that patients, and/or persons assisting the patients at home, were capable of managing responsibilities such as following pre-operative instructions and post-operative care which takes place at home. To this, 84% of all physicians felt that patients were capable of managing such responsibilities. Fewer physicians (73%), though, stated that most home environments were better in terms of comfort, food, and privacy, as compared to the average hospital ward. Although physicians tend to

think that patients are capable of managing the aforementioned responsibilities, 39% of physicians noted the likelihood of day surgery increasing the demand for physicians' house calls and/or visits to the emergency department which may arise due to complications or patients' anxiety.

It is frequently stated in the literature that the supply of inpatient beds promotes their use if the beds are easily available. As a proxy measure for physician acceptance of day surgery, physicians were asked to comment on the statement that, if they had a choice, they would prefer to admit the patient rather then to treat the patient as a day surgery case. In response to this, 80% indicated that they would not prefer to treat the case as an inpatient, and only 15% said that they would prefer to admit their patients.

Further analysis was conducted to investigate any differences in attitudes according to the age of the physicians and his/her years of medical practice. Table 8 shows that the number of years of medical practice may have some influence on whether potential day surgery patients are admitted. The preference of admitting patients increased from 0% for the 3 to 5 year medical practice group to 24% for the 21 and over year medical practice group. In addition, the proportion of physicians who disagreed with the statement (with the exception of the 21+ group) also increased. Also, Table 8 shows that physicians having fewer

TABLE 8

Percentage of Physicians who prefer Inpatient over the Day Surgery mode (Question Item B-9)

| Years of Medical Practice | Agreed (%) | Disagreed (%) | Don't Know (%) |
|---|---|---|---|
| 3 - 5 | 0 | 68 | 32 |
| 6 - 10 | 5 | 85 | 10 |
| 11 - 20 | 11 | 87 | 2 |
| 21+ | 24 | 73 | 3 |

years of experience are more undecided than those with more years of medical experience. The analysis according to age revealed similar results.

When physicians were asked (Item B-14) if they would opt to undergo surgery on a day visit basis, 91% of the physicians responded that they would opt for such a service if it was available.

The proponents of day surgery frequently maintain that day surgery reduces the patient's chance of acquiring hospital infections. Seventy-seven percent of all physicians agreed with the statement although 16% indicated that they did not know.

The physicians were asked (Item B-12) if the main risks of day surgery were associated with the time of induction of and arousal from anaesthesia rather than from the surgery per se, or from post-operative events. To this 53% of physicians agreed that the main risks were associated with the time of induction of and arousal from anaesthesia, 26% disagreed and 21% did not know. Further analysis revealed that a larger proportion of anaesthetists disagreed (42%) with the statement. From this it may be speculated that further lowering of perceived or real risks associated with anaesthetics will probably result in more acceptance of day surgery as an alternative by the physicians. In this regard, it must be recalled that one of the major reasons for the surge in day surgery has been the recent advances in anaesthetics and anaesthetic techniques (Ogg, 1980).

A series of statements (B-15 to B-18) were issued to determine if physicians perceived that the demand for day surgery programs in Alberta would increase within the next five years, and what action(s) government should take regarding day surgery. Ninety-one percent of all physicians agreed that the demand for day surgery would increase. Furthermore, 79% of all respondents indicated that the provincial government should give day surgery a higher priority when allocating health care funds. A similar proportion of physicians (83%) felt that a financial incentive should be provided to hospitals to promote the development and use of day surgery. The final statement (B-18) in this section was intended to determine whether physicians felt that fee incentives were needed to promote the further development and use of day surgery; to this, 56% agreed, 29% disagreed, and 15% did not know. Further investigation revealed that urologists (70%), general surgeons (73%), and plastic surgeons (88%) were in accordance with such fee incentives. In contrast, only 38% of all anaesthetists, 41% of pediatricians, and 44% of otolaryngologists felt that fee incentives were needed.

In summary, the results of this section indicate that a majority of the physicians surveyed are very favourable to the concept of day surgery and believes that the government should develop a province-wide policy to promote the use of day surgery in all Alberta hospitals and invest resources towards such development.

The findings suggest that some of the patients presently admitted as inpatients could be classified as day surgery cases. Physicians also believe that the majority of patients would prefer surgical services on a day surgery basis if they had a choice. The findings also indicate that the increase of day surgery services may cause an increase in the demand for emergency visits due to post-operative complications.

### 4.3.4 PHYSICAL FACILITIES AND SERVICES OF DAY SURGERY PROGRAM

Section C was designed to solicit information about physicians' ideas of where day surgery programs should be offered, as well as what types of facilities and services should exist with such programs.

Physicians were asked (item C-1) to select one or more alternatives of where day surgery programs should be offered: a hospital, a hospital linked free-standing facility, or a free-standing day surgery centre. Eighty-nine percent of all respondents indicated that hospitals should be the place to offer a day surgery program, 57% also indicated that a hospital linked free-standing facility should be the place, and finally 34% indicated that a free-standing facility should be the place to offer a day surgery program. Further analysis revealed that 33% of all respondents felt that day surgery should take place only in hospitals. Twenty-seven percent of all physicians gave no

preference from among the three alternatives.

Physicians were asked (Item C-2) which facilities they felt must be dedicated to a hospital based day surgery unit. Regarding the four alternatives listed, 84% of all respondents indicated that a day surgery unit must have at least its own post-operative observation area, 63% mentioned a post-anaesthetic recovery room, 62% mentioned its own operating room, and 56% mentioned its own admitting services. Thirty-two percent of the physicians indicated that all four of the items listed must be included in a hospital based day surgery unit. Alternatively, 16% indicated that the existence of a post-operative observation area, a post-anaesthetic recovery room, and an operating room are essential in a hospital based day surgery unit. Several physicians specified that inpatient facilities, such as the main operating room and recovery room, could be shared with day surgery cases. Separate day care facilities are desireable in major hospitals but are not essential in smaller hospitals. Other suggestions made by physicians were: a pre-operational assessment clinic for anaesthetists, a follow-up clinic, an admission laboratory service and an independent nursing, orderly, and portering staff. Finally in regards to the type of post-operative care services, 49% of all respondents were at least in favour of compulsory home nursing services. In contrast, 86% were at least in favour of ad hoc post-operative home nursing visits as assigned by the patient's physician. Equally popular (83%)

is a 24-hour 7-days-a-week telephone contact service. The findings appear to suggest that a telephone contact service is sufficient but that some provisions should be made to have home nursing visits as requested by the physician.

In conclusion, although a majority of physicians feel that a hospital should be the place to operate a day surgery program, a substantial number of physicians also feel that a hospital linked free-standing facility as well as a free-standing centre could provide alternatives. The majority of physicians did not feel that a completely autonomous day surgery unit within the hospital was absolutely necessary (although ideal) except perhaps, for very large hospitals.

### 4.3.5 GENERAL COMMENTS

The final portion of the physician mail questionnaire allowed physicians to give any additional comments on day surgery in general. The edited comments are included in Appendix H . These comments are classified according to specialty group.

Overall, the comments regarding the concept of day surgery were favourable. The main areas emphasized by the physicians were as follows: (a) economic benefits, (b) criteria for patient selection, (c) requirements for pre- and post-operative services, and (d) personnel and facility requirements.

It was generally felt that day surgery services provide a means for better utilization of hospital facilities. Moreover, it provides a cost effective method for performing minor surgical procedures. Two respondents felt that many surgical patients now hospitalized over a two to three day stay could easily have their surgery performed on day surgery bases.

Criteria for patient selection were also an important concern of physicians especially for the anaesthetists. One of the respondents pointed out that standardized medical criteria suitable for day surgery are needed, since the success of day surgery services depends on the meticulous care taken in selecting appropriate patients and surgical procedures.

Many anaesthetists felt that pre-operative service requires rigid patient instruction which the patient must follow if he/she is to have surgery. Proper patient information as well as clinical and anaesthetic assessment were considered important prior to surgery. In contrast, the general surgeons' comments tended to focus on post-operative service requirements. Many concerns with pre- and post-operative services dealt with communication problems. Another frequently mentioned need was the provision of back-up inpatient beds for patients with possible complications.

Several physicians commented on the need for qualified medical and nursing staff as well as a need for appropriate

physical facilities and equipment. Many expressed the concern that the quality in terms of staff and facilities for a day surgery program should remain equivalent to that provided for inpatient services. A few physicians suggested the possibility of the abuse of day surgery services whereby inappropriate patients might be booked in a day surgery unit because of the shortage of inpatient beds.

In conclusion, many physicians felt that the present level of day surgery services in Alberta is inadequate and that day surgery would provide a more efficient use of health care resources.

## 4.4 NEED ASSESSMENT

This section presents the potential day surgery load (DSL) obtained from the three methods developed in the previous chapter. The potential impact of day surgery services on patient days will also be discussed.

### 4.4.1 DAY SURGERY LOAD

#### (1) Method I

This method basically divided the LOS distributions for the various operation categories into two parts by using a LOS value as a cut-off point. As previously discussed in the methodology chapter, the assumption made is that all cases less than or equal to the cut-off point are prime candidates for day surgery. This assumption was admittedly crude,

however, it was necessary due to insufficient empirical data. In an attempt to minimize the subjectivity in selecting a LOS value along the distribution, two separate analyses were included for each operation category. The first analysis consisted of using 2 days (LOS=2) as a cut-off point and the second analysis used 3 days (LOS = 3); these will be treated as minimum and maximum ranges. Table 9 provides a DSL summary, showing the average number of inpatient surgical cases per year which could potentially be classified as day surgery. In looking at all surgical procedures, the findings revealed that between 46,200 and 61,600 cases per year could possibly have been done on a day surgery basis. The most predominant transfer would occur in the areas of gynecology and ear, nose, and throat surgery.

In order to determine the values for pediatric cases, it was necessary to select all cases where the patient was over 1 and less than or equal to 14 years of age. This represented the age range for identifying pediatric patients in this study. Using a 5% sample from the main PAS data file for the year 1978, a rate was calculated indicating the proportion of surgical cases which were pediatric over the proportion of cases which were between 1 and 64 years (inclusive). A rate was calculated for each LOS value. These rates were then multiplied by the respective total number of surgical cases obtained from the LOS data file (1974-1978) excluding patients under 1 and over 64. One assumption with the above methodology is that the 1978 data file was an

TABLE 9

Potential Day Surgery Service Load per year
Method I

| Type of Surgery | Number of Cases LOS ≤ 2 (000) | Number of Cases LOS ≤ 3 (000) |
|---|---|---|
| Gynecological | 15.1 | 17.9 |
| Ear, Nose and Throat | 14.1 | 18.4 |
| Orthopaedic | 5.7 | 8.1 |
| Eye | 1.4 | 1.8 |
| Urological | 0.6 | 0.8 |
| TOTAL (above) | 36.9 | 47.0 |
| Pediatric[1] | 10.9 | 12.9 |
| All Surgical Operations | .2 | 61.6 |

[1]Estimated from a 5% sample of the 1978 data file

adequate representation of the previous years' distributions.

The analysis regarding all operations involving plastic surgery was omitted due to the fact that the PAS system has the operation categories coded on a body system i.e., plastic surgery does not have its own category. This implies that plastic surgery is recorded in a similar manner as pediatric surgery, namely, within various operation categories. Unlike pediatric cases, which can be identified according to the patient's age there was no reasonable method to estimate the number of procedures which involved plastic surgery.

The basic limitation with this method of estimation is that it relies on the assumptions that the LOS values of 2 and 3 days are reasonable criteria for estimating day surgery services for all operation categories investigated. Although in some cases this may be true, it is highly unlikely that it is the case for all operation categories. Method II, however, eliminates this limitation since each procedure has a different cut-off point which is based on physicians' expert opinions.

**(2) Method II**

In this method, physicians' opinions were solicited to estimate what proportion of all inpatient operations could be done safely on a day surgery basis. This approach reduces some of the weaknesses inherent in Method I, namely, using LOS as the criterion for determining the DSP. The DSL for

each procedure was calculated by applying the DSP to the surgical volumes recorded in Alberta hospitals during 1974 to 1978 (see Appendix I). The data collected showed wide ranges in the DSP. This, however, is to be expected when examining a group of knowledgeable individuals to arrive at an estimate of an uncertain quantity. Differences regarding physicians' attitudes, value judgements, experience in the practice of medicine e.g., the type and amount of operations they perform within their specialty, and the likelihood that the operation categories are understood and interpreted unequally among all physicians all contribute to the divergent values for EP. Although one may expect that a few estimates were perhaps wild guesses, it is believed by the investigator that the majority of physicians did make a sincere attempt to provide the most reasonable estimate based on his/her own personal experience. Many of the physicians who did not give an estimate, indicated that they were unable to answer the question.

Faced at times with the problem of very extreme values of EP, the analysis consisted of calculating the median of each minimum and maximum EP for each operation category. The mean, which is a commonly used measure of central tendency, was not applied since it is sensitive to extreme values. The median conveys the notion of being the most middle value and divides a distribution into two halves. Thus, the measure is not affected by extreme values.

Over half of the physicians who replied made an effort to estimate values except for the general practitioners, internists, and pediatricians. This was expected since physicians such as general practitioners are less involved with surgery in general.

Appendix J lists the DSP obtained for all operation categories included in the study. In addition to median values, the first quartile of the minimum estimate distribution and the third quartile of the maximum estimate distribution are included. Also listed are the number of respondents who estimated for each operation category. The quartile values clearly point out the vast spread of estimates for each operation category.

As shown in Table 10, Alberta physicians estimated that between 15 and 30 percent of all inpatient surgical procedures could be done on a day surgery basis. The applications of these estimates to the average volume of inpatient surgical cases per year indicates that between 25,900 and 53,000 surgical cases per year could potentially be classified as day surgery. The division of the analysis by types of surgery revealed that gynecological and ear, nose, and throat surgery would account for a large majority of the potential DSP.

The most commonly performed day surgery operation cited in the literature was that of the dilation and curettage of the uterus (D & C). It was not surprising, therefore, that 80% to 90% of all D & C(s) are believed to be suitable for

TABLE 10

Potential Day Surgery Service Load per year
Method II

| Type of Surgery | Minimum | | Maximum | |
|---|---|---|---|---|
| | Median DSP (%) | No. of Cases (000) | Median DSP (%) | No. of Cases (000) |
| Gynecological | 22 | 7.2 | 42 | 13.5 |
| Ear, Nose and Throat | 25 | 5.6 | 51 | 11.4 |
| Orthopaedic | 11 | 2.6 | 21 | 4.9 |
| Eye | 31 | 1.6 | 51 | 2.7 |
| Urological | 20 | 0.8 | 35 | 1.4 |
| Pediatric[1] | 25 | 4.4 | 50 | 8.7 |
| Pediatric[2] | 33 | 5.7 | 52 | 9.1 |
| All Surgical Operations | 15 | 25.9 | 30 | 53.0 |
| Dilation and Curettage (D & C) | 80 | 9.1 | 90 | 10.3 |
| Tonsilectomy and Adenoidectomy | 35 | 3.3 | 51 | 4.8 |
| Hernia (infant) | 76 | 0.6 | 90 | 0.7 |
| Hernia (adult) | 11 | 0.5 | 27 | 1.3 |

[1]Estimated by all physicians

[2]Estimated by pediatricians

day surgery. According to otorlaryngologists, 35% to 51% of tonsillectomies and adenoidectomies done separately or together, are suitable for day surgery. This is, however, significantly higher than the 4.5% which was done in British Columbia in 1977 (British Columbia, 1977). As was suggested in the literature, all operations involving hernia repair will differ depending on the patient's age. It is estimated that a large proportion of hernia repairs done on infants (76% to 90%) could be done as day surgery. The proportion declined drastically for adults, where only 11% to 27% were possible day surgery cases.

The DSP used to estimate the number of surgical cases appropriate for day surgery may well be accurate, although subjective. The DSL's obtained in this section reflect experts' opinions of the need assessment for day surgery services in Alberta and should be used by planners, in conjunction with Method I results, as guidelines for planning and optimizing the effectiveness of day surgery in the realm of surgical services in Alberta. One must recall that the findings are based on retrospective surgical data and that any forecast of need should evaluate factors which may have altered the surgical patterns reflected in the 1974-1978 data base e.g., recording of day surgery and increases in day surgery programs since 1978.

**(3) METHOD III**

As discussed in the previous chapter, the comparison of surgical rates with other geographic regions can be used as

an approach to assess the need for day surgery services. The quality of the assessment, though, is highly dependent upon the selection of the prototype population used as the standard and compatability of the statistical data. One approach is to apply day surgery rates of the prototype area to the study population to provide some measure of need. However, the incomplete nature of the day surgery data base in Alberta precluded this option. Alternatively, the need assessment was done by examining British Columbia's hospital inpatient surgical rates (HISR) and applying them to Alberta's population. This provides an estimate of the volume of hospital inpatient cases to be expected in Alberta. It is hypothesized that any excess of actual cases over expected cases would represent the number of hospital inpatient surgical cases which could be done on a day surgery basis.

Table 11 shows the results obtained from this analysis. Due to differences in classification systems for recording hospital separations involving surgical operations, only similar types of surgical operation categories were analyzed.

On the basis of the above approach, the findings suggest that 42,800 of the 177,200 (24%) cases involving surgical operations could possibly be done on a day surgery basis each year. This interpretation may be over-simplified since other factors which have not been adjusted for may affect surgical rates. However, the results found in Table

TABLE 11

Potential Day Surgery Service Load per year
Method III

| Type of Surgery[1] | Yearly Average Observed Inpatient Surgery (1) (000) | Yearly Average Expected Inpatient Surgery (2) (000) | Potential Day Surgery (1-2) (000) |
|---|---|---|---|
| Gynecological | 32.5 | 19.0 | 13.5 |
| Ear, Nose and Throat | 22.4 | 12.7 | 9.7 |
| Orthopaedic | 23.6 | 22.0 | 1.6 |
| Eye | 5.3 | 4.7 | 0.6 |
| All Surgical Operations | 177.2 | 134.4 | 42.8 |

[1]Due to different classification systems, only the above groups were included in the analysis.

11 fall very close to, if not well within those found by Method II.

Obviously, the transfer of surgical cases from an inpatient to an ambulatory basis will result in a potential reduction of patient day or inpatient hospital beds. The following section discusses the potential impact of day surgery services in terms of patient days saved (PDS).

### 4.4.2 POTENTIAL IMPACT OF DAY SURGERY SERVICES

This section compares and examines the potential impact of day surgery in terms of PDS if fully developed using the findings obtained in the previous section. Furthermore, a projection of future day surgery bed requirements will be made.

**(1) Patient Days Saved**

The potential PDS assumes that the inpatient load of the hospitals falls by an amount equal to the increase in the DSL estimated in the previous section. Since the LOS value for each (or a group of) case(s) included in the DSL of the various operation categories is unavailable, PDS was calculated based on the assumption that all such cases (DSL) represent the lower end of the LOS distribution excluding cases with patients under and over 64 years of age.

Table 12 shows a comparison among the three methods developed to assess the need for day surgery services of the potential PDS for the main operation categories. Although the results obtained through Method I tend to be slightly

TABLE 12

Potential Patient-Days Saved per year

| Type of Surgery | Method I | | Method II | | Method III (000) |
|---|---|---|---|---|---|
| | LOS ≤ 2 (000) | LOS ≤ 3 (000) | Minimum (000) | Maximum (000) | |
| Ear, Nose and Throat | 24.9 | 38.6 | 7.6 | 19.3 | 15.6 |
| Gynecological | 22.2 | 30.7 | 7.2 | 19.7 | 19.0 |
| Orthopaedic | 8.5 | 15.6 | 2.6 | 6.9 | 1.6 |
| Eye | 2.4 | 3.5 | 3.0 | 8.8 | 0.6 |
| Urological | 0.8 | 1.5 | 1.4 | 4.3 | - |
| Pediatric[1] | 19.0 | 24.9 | 8.5 | 15.4 | - |
| All Surgical Operations[2] | 72.8 | 119.0 | 32.1 | 93.2 | 66.1 |

[1]Using estimates obtained from pediatricians

[2]Using the median estimate of all physicians

higher than those obtained through Method II and III, a close examination of the sub-operation categories shown in Appendix K indicates that the discrepencies among the results obtained between Method I and II are much smaller. One possible explanation is that the analysis at the sub-category levels may be more sensitive to the LOS distribution. The following analogy explains the above supposition.

Suppose that an operation category A-B consists of 10 cases with a LOS distribution shown in Figure 9. The category A-B consists of two sub-categories A and B, each having 5 cases with different LOS distributions as shown in Figure 9. If one assumes the DSP for all these categories is .40 or 40%, then the PDS for the A-B category is 4 days but the summation of the PDS for both A and B is 6 days . It is evident that if the DSPs remain constant, and the configurations in A and B LOS distributions changed, then the summation of the PDS for both A and B would also change. To reduce this problem, a DSP for each LOS value would have to be obtained. The lack of empirical data, however, precluded this option. An example of this problem is disscussed in the following.

The findings shown in Table 13 are based on DSPs derived from orthopaedic surgeons EP. The potential PDS regarding all of orthopaedic surgery which could be performed on a day surgery basis varied from a minimum of 2,600 to a maximum of 6,900 patient days per year. However,

Figure 9

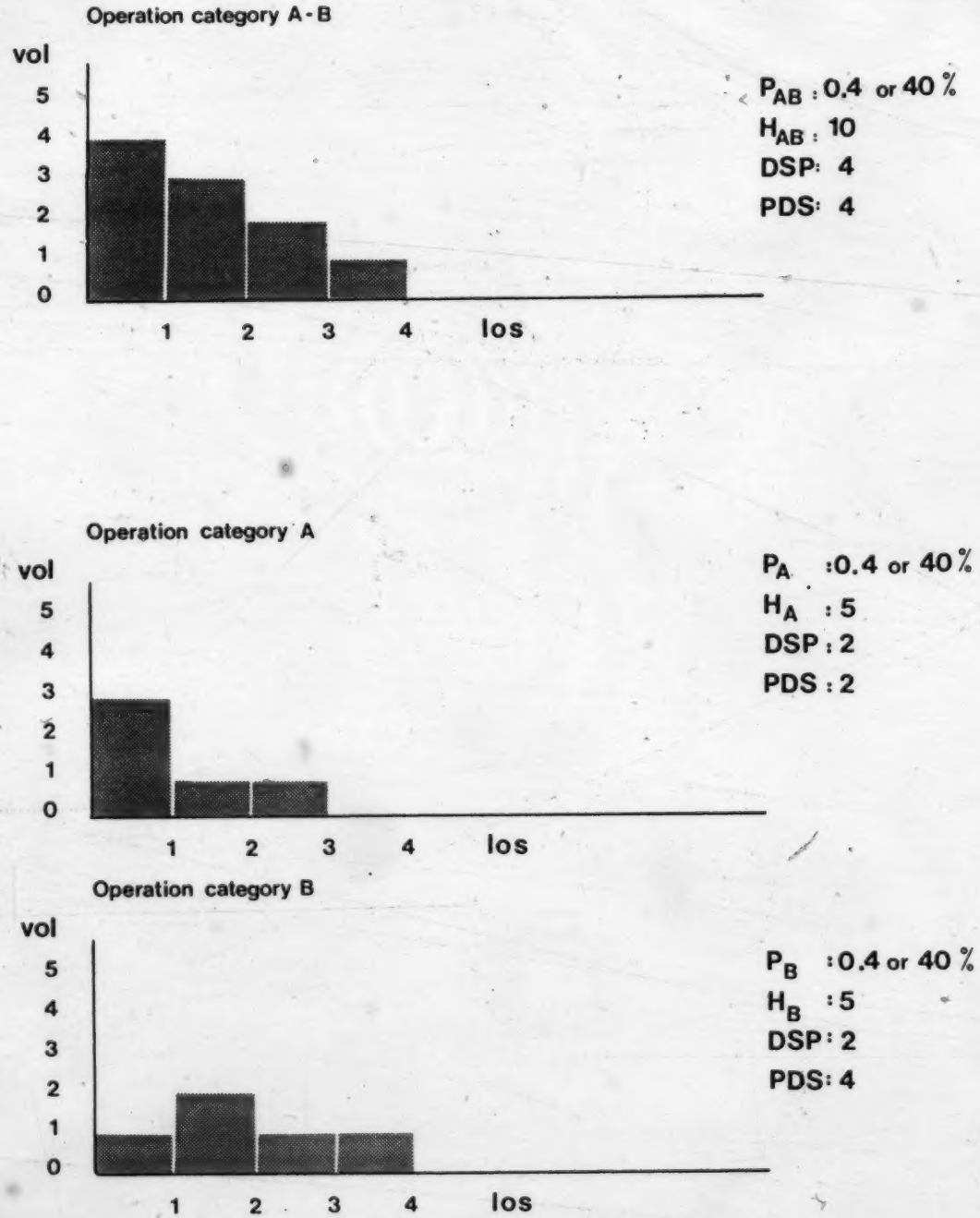

Operation category A-B
vol
5
4
3
2
1
0
1
2
3
4
los
$P_{AB}$ : 0.4 or 40 %
$H_{AB}$ : 10
DSP: 4
PDS: 4
Operation category A
vol
5
4
3
2
1
0
1
2
3
4
los
$P_A$ : 0.4 or 40 %
$H_A$ : 5
DSP : 2
PDS : 2
Operation category B
vol
5
4
3
2
1
0
1
2
3
4
los
$P_B$ : 0.4 or 40 %
$H_B$ : 5
DSP: 2
PDS: 4

TABLE 13

Potential Patient-Days Saved per year
for Orthopaedic Type of Surgery[1]

| H-ICDA Operation Code | Method II | | | |
|---|---|---|---|---|
| | Minimum (000) | | Maximum (000) | |
| | DSL | PDS | DSL | PDS |
| 76.0 - 78.9[2] | 0.2 | 0.2 | 0.6 | 1.2 |
| 79.0 - 79.9[3] | 1.8 | 2.1 | 3.6 | 6.9 |
| 80.0 - 80.9[4] | 0.5 | 1.1 | 1.0 | 2.8 |
| 81.0 - 81.9[5] | 0.3 | 0.6 | 0.5 | 1.5 |
| 82.0 - 83.9[6] | 0.6 | 0.6 | 1.7 | 2.9 |
| TOTAL (above) | 3.4 | 4.6 | 7.4 | 15.1 |
| 76.0 - 83.9[7] | 2.6 | 2.6 | 4.9 | 6.9 |

[1]Excludes nasal bones and accessory

[2]All operations performed on bones (including reduction of facial fractures, operations on facial bones and other bones

[3]Reduction of fracture and dislocation

[4]Incision and Excision of joint structures

[5]Repair and plastic operations on joint structures

[6]Operations on all muscles, tendons, fascia and bursa

[7]All orthopaedic surgery

the summation of the PDS values for each sub-operational category is greater than the overall estimated PDS value for the operation category of all orthopaedic surgery. The summation of the sub-operation categories listed in Table 13 is equal to 4,600 and 15,100 patient days for the minimum and maximum values respectively. This represents almost a two fold difference. The most obvious explanation for the discrepancy is the inconsistencies which may exist in estimating minimum and maximum DSP using expert opinions.

As seen in Figure 9 the sum of patient days is affected by the LOS distributions, therefore, any errors or discrepancies which existed in estimating the DSL, may be culminated when transforming the findings into patient days. The results shown in Table 13 may also be transformed into number of inpatient beds saved. The transformation of PDS into bed savings is performed according to the following computation:

$$IPBi = PDSi/365*\text{occupancy rate} \qquad (10)$$

where

IPBi = potential number of inpatient beds saved

PDSi = potential patient days saved

i = the operation category.

For example, on the basis of the Method II findings, the number of beds saved for all surgical operations would range from 110 beds to 319 beds assuming an average occupancy rate of 80%. Hence, day surgery services can

potentially contribute significantly in terms of inpatient bed reduction or dampening the future demand for such beds. Should this be achieved, additional day surgery facilities would be required.

(2) Day Surgery Bed Requirements

The previous section recognized that day surgery services may provide some savings in terms of inpatient beds. However, one must also realize that the implementation of a day surgery program will also require the need for day surgery beds. To forecast the number of day surgery beds required two conditions were established: (a) a day surgery program would be operational during weekdays only and (b) on average, each day surgery bed would be occupied by one patient during the day. Hence, the total number of day surgery beds required (Di) can be estimated as follows:

$$Di = DSLi/250*\text{occupancy rate} \qquad (11)$$

where

Di = potential number of day surgery beds required

DSLi = potential number of day surgery services required

i = refers to the operation category.

For example, between 115 and 235 day surgery beds would be required to substitute between 15 and 30 percent of all inpatient surgical operations (based on Method II findings and assuming an occupancy rate of 90% and ten days of statutory holidays per year). The above range of day surgery

beds represent an addition to the average number of such beds which may have existed during 1974 to 1978, disregarding population increases. For example, a 10% increase in the population of Alberta since 1976 (middle point) may necessitate a corresponding increase in day surgery beds, if the same level of service is to be maintained (i.e., the range would increase to between 127 and 259 beds).

## 4.5 LIMITATIONS AND ASSUMPTIONS

Ideally, the assessment of the need for day surgery services in Alberta should encompass the whole spectrum of surgical services i.e., outpatient, day, and inpatient surgery. As a result of data limitations, this study focused on the inpatient surgical services. However, the analysis was not totally free from dealing with inappropriate data since day surgery is frequently recorded as inpatient surgery. The hospital survey revealed that 33% of all hospitals involved with day surgery still record it on an inpatient basis.

One must recognize that the quality of the need forcast for day surgery services or the assessment of the potential impact of such services in terms of inpatient beds saved, will depend highly on the quality of the data available for the study.

Although very descriptive, the main limitations of the approaches used in Methods I and III were the result of inadequate data and the exclusive reliance on past utilization data. It is obvious that Method I was a very crude approach for measuring need. However, the analysis may have been improved if additional information on the patient selection criteria for other variables such as the patient's anaesthetic risk (i.e. ASAI or ASAII) were available and used in a fashion similar to the age variable.

One of the limitations of Method III revolves around the difficulty of ascertaining whether some or all of the difference between Alberta's actual and adjusted inpatient surgical load can be attributed to potential day surgery cases which are being performed on an inpatient basis. It may well be that the difference results from demographic differences between Alberta and British Columbia. Although further research is required, evidence suggests that at least some variation is due to the inappropriate utilization of inpatient services.

To supplement the descriptive approaches used in Methods I and III, Method II (more normative in nature) was developed to provide health planners with perhaps more acceptable and justifiable information. It is important to realize that although all three methods have strengths and weaknesses, together they provide a reasonable estimation of potential day surgery service need in Alberta. Method II was developed and justified on the basis that in situations

where there is uncertainty due to incomplete information, a lack of empirical data, or inadequate theories, expert judgement can be used as an alternative. However, the quality of the need assessment depends heavily on the appropriateness of the group-derived estimates for need i.e., the quality of the assessment relies to some extent on the method used to obtain the data regarding the EP.

The EP showed substantial variations among physicians within each specialty. The variation, however, was inevitable and in part resulted from the survey design i.e., each specialty consisted of a heterogeneous group of physicians. For example, all gynecologists were included in the survey. Perhaps, if only a few gynecologists were included who had hospital admitting privileges and a certain level of experience with day surgery (i.e., a more homogeneous group), then less variation in the EP may have resulted. Hence, it is reasonable to assume that the wide range of EP gathered was partially attributable to those physicians who perhaps had an inappropriate background for providing reasonable estimates or to the varying opinions.

Although the inclusion of all physicians was the most practical approach for this study as discussed in Chapter 3, two other approaches may have minimized the degree of inconsistent or wide variations in EP. One alternative mentioned above is to modify the estimation process by surveying a more reliable group (or homogeneous group) of physicians with certain homogeneous characteristics such as

years of experience and hospital admitting priviledges. It may well be that such an approach could provide more consistency in the estimation; however, due to the variations which arise from factors such as personality and individual value judgements, this approach would still suffer from some inconsistent estimates. Moreover if the goal is to reach a consensus among a group of physicians, the Delphi may prove to be the ultimate approach for achieving this. Although the two alternative approaches discussed above could potentially provide more reasonable estimates, many difficulties would have had to be overcome to make such alternatives feasible.

Finally, health planners must be cognizant of the fact that the results obtained in all three methods are based on past utilization data for the years 1974 to 1978. Therefore, any forecasting should take into account changes such as population increases, age-sex distribution, surgical load, and other demographic and non-demographic variables.

## 4.6 SUMMARY

In the last five years there has been an expansion of day surgery services in Alberta hospitals. However, due to the inconsistent methods of reporting day surgery and inappropriate information systems, it is difficult to assess accurately the magnitude of this apparent growth. Although approximately one half of all Alberta's hospitals are

presently involved in some organized fashion for delivering day surgery services, most services are being rendered in the larger city hospitals.

Several findings suggested that an opportunity still remains for further growth since many hospital inpatient cases could be done on a day visit basis if adequate day surgery programs were provided. A majority of physicians surveyed are favourable to the concept of day surgery and believe that the government should develop province-wide policy to promote the use of day surgery services in all Alberta hospitals. The impact of this growth as revealed in the need assessment analysis could potentially reduce a significant amount of patient days and/or inpatient surgical beds.

It appears that the manner in which day surgery facilities presently function varies in regards to organization, administration, and staffing patterns. However, the majority of hospitals are using existing inpatient facilities such as the main OR, admitting, and pre- and post-operative care areas for the provision of day surgery services.

The need assessment obtained by the three methods did vary. The results, however, were reasonably close and the differences among the results should not underscore the merit of such findings which could be used as guidelines for future resource allocation in the realm of surgical services. The assessment of day surgery service need varied

among the different specialty areas. The greatest need for such services was found to be in the area of gynecological and ear, nose, and throat surgery. The need assessment study for the various specialty areas will provide individual hospitals, specializing in certain surgical services, with additional information which can be used as a guideline for developing their future day surgery service need.

In conclusion, Alberta hospitals appear to be under-utilizing day surgery services. Although various reasons may explain this, it is evident that a maldistribution of health care resources favouring the construction and utilization of inpatient surgical facilities has affected, in the past, the development and use of day surgery services.

# CHAPTER 5

## SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

### 5.1 SUMMARY

This study was undertaken in response to the apparent inadequate balance among the various modes of delivering surgical services in Alberta. There is some evidence which indicates that the proportion of day surgery performed in Alberta is less than that performed in most other Canadian provinces, while the literature suggests a surge in use of day surgery services in most parts of the world. The literature on day surgery, although extensive, was limited in scope. It was essentially descriptive in nature, reporting on the experiences of individual hospitals and/or free-standing facilities. Very few articles addressed or discussed, in some breadth, methods to evaluate the service need for day surgery or the development of an appropriate patient classification system in the realm of surgical services which would improve the effectiveness and efficiency of surgical services. It is also evident that very little attention has been given to developing assessment criteria for differentiating the three surgical modes: office visits, day surgery, and hospital inpatient surgical services.

The main interest of this study was the estimation of the proportion of surgical cases treated on an inpatient basis which could have been treated on an ambulatory basis.

Three approaches were developed to achieve the above task.

One approach is based on the examination of hospital discharge data according to the LOS distribution for those cases which required surgical operations (excluding patients under 1 and over 64 years of age). Conditional on the assumption that short LOS cases could be served on a day surgery unit, the number of surgical cases with length of stay (LOS) less than or equal to 2 and less than or equal to 3 were used as an approximate range in estimating potential day surgery service load. The second approach employs the use of physicians' perceptions of what the "need" for day surgery services ought to be under ideal conditions. The third approach uses surgical utilization rates obtained from a prototype population i.e., British Columbia in an attempt to measure future "need" for day surgery services in Alberta. The comparison of day surgery rates between Alberta and British Columbia was not possible because of the incomplete nature of the day surgery data base in Alberta. Consequently, the analysis consisted of examining British Columbia's hospital inpatient surgical rates and applying them to Alberta's population to estimate the expected number of hospital inpatient surgical cases in Alberta. The need for day surgery services in Alberta was approximated by measuring the excess of the actual over the expected number of inpatient surgical cases. One of the underlying assumptions of this last approach is that British Columbia has a reasonably adequate balance among the various modes of

delivering surgical services. Although each of the three approaches used in the study has certain merits, limitations, and weaknesses, as a whole, they provide some guidelines for health planners regarding how much more room there is for the development of day surgery services in Alberta.

Generally speaking, the level of need for health services is influenced by several factors, in particular, the opinions and value judgements of professionals. Although the value judgement of the professional is frequently cited as being important, physicians' opinions have been rarely utilized in a quantifiable fashion to estimate the need for a health service. Therefore, unlike many other studies, the most important component of this study was the measurement of physicians' perceptions of need for day surgery services. Hence, the survey research technique which provided the data for physicians' estimates of need, and the application of these estimates to hospital surgical operation data for the years 1974 to 1978, constituted the methodological basis of this study. Because of the use of utilization data, this study was similar to many other health care research studies of need in that it was not immune to relying on such data. To supplement the above, physicians' general opinions towards various issues surrounding the concept and future development of day surgery services were solicited. Finally, a hospital survey was conducted to gather some factual information regarding the present day surgery services in

Alberta hospitals.

Data limitations precluded the analysis of the entire spectrum of surgical services. This impinged upon the study design by imposing certain restrictions and assumptions. As a result of the exploratory nature of this research, as well as data limitations, the study was restricted to a descriptive approach. That is, the study did not deal with any hypothesis testing or any statistical inference, and focused on the use of simple descriptive statistics.

## 5.2 FINDINGS

The major findings resulting from this study are summarized as follows:

1. Hospital inpatient surgical rates in Alberta are the highest among all other Canadian provinces. Concomitantly, there appears to be less day surgery performed in Alberta than in other provinces some of which appear to have actively promoted this type of surgery.
2. In the last five years there has been an expansion of day surgery services in Alberta; however, due to the inconsistent methods of reporting day surgery and the lack of appropriate information systems, it is difficult to accurately assess the magnitude of this growth.
3. A majority of physicians surveyed are very favourble to the concept of day surgery and believe that government

should develop a province-wide policy to promote the use of day surgery services in all Alberta hospitals.

4. Presently, only a few hospitals in Alberta have dedicated day surgery facilities.
5. Day surgery service needs in Alberta, based on the level of surgical services recorded in Alberta hospitals during 1974-78 were estimated to be the following:
   (i) Method I: The review of hospital inpatient surgical data revealed that the average number of inpatient surgical cases per year which could potentially have been done on a day surgery basis ranged between 46,000 and 62,000 cases per year. The potential impact of this in terms of patient days saved (PDS) could vary on average between 73,000 and 119,000 patient days per year.
   (ii) Method II: The assessment of need using physicians' opinions suggest that between 26,000 and 53,000 surgical cases per year could potentially have been done on a day surgery basis. This would result in an estimated saving between 32,000 and 93,000 patient days.
   (iii) Method III: The comparison of hospital inpatient surgical rates between British Columbia and Alberta indicated that approximately 43,000 surgical cases per year could potentially be done on a day surgery basis. This would imply an average potential saving of 66,000 patient days per year.
6. Day surgery service need varied among the different

specialties. The greatest need for such services was found to be in the area of gynecological and ear, nose, and throat surgery.

7. Based on physicians' estimates, between 110 and 320 hospital surgical inpatient beds could be potentially freed for other services. Concomitantly, between 115 and 235 additional day surgery beds would be required to allow substitution for the above inpatient services.

## 5.3 CONCLUSIONS

On the basis of the findings of this study, it may be concluded that:

1. There is substantial need for more day surgery services in Alberta hospitals. The inpatient surgical rate comparison between Alberta and British Columbia, and the assessment of day surgery need by Alberta's physicians strongly suggest an inbalance in the delivery of services between the inpatient and day surgery modes. Therefore, even though a number of hospitals are offering day surgery services, there is still room for further growth since many hospital inpatient surgical cases could potentially be done on a day visit basis if adequate day surgery programs were provided. The impact of this growth could substantially reduce patient days (inpatient surgical beds) or it could indirectly increase bed availability for more seriously ill

patients, without expanding inpatient facilities.

It may well be that the generous supply of acute care beds in Alberta and the inadequate level of day surgery facilities may account for the above observations. However, more research is needed to prove whether utilization patterns of surgical services are largely determined by the availability of physical facilities of either inpatient or day surgery beds.

2. In spite of the surge in day surgery services in Alberta, the monitoring of the load and types of operations done on a day surgery basis appears to be non-existent or, at most, inadequate. Adequate information should exist to allow health planners, researchers, and other health professionals to monitor the growth of day surgery services and to detect any possible under- or over-utilization of services. Government has the responsibility to assure the public that day surgery facilities will not promote the utilization of excessive amounts of surgical services deemed to be unnecessary. Moreover, it is equally important that day surgery services do not distend to the point that patients who would be better treated on an inpatient basis are put at risk, or that day surgery services become a substitute for services which should be offered in a physician's office or outpatient clinic.
3. The absence of a province-wide policy directed towards the development and utilization of day surgery services

raises concerns regarding quality assurance. Based on the apparent favourable attitudes of physicians and hospital representatives towards day surgery programs and their perceptions that the demand for day surgery services will increase in the future years, it is evident that further development and expansion of such services could and should result. Hence, standards must be established either at the provincial level or the hospital level, or both, regarding the minimum requirements for physical facilities, equipment, and staffing needs. Perhaps, more importantly, standards for patient selection criteria require further development.

Since much of the success of day surgery programs impinges upon the organization of pre- and post-operative services, it is necessary that standards are set to ensure that patients are provided with adequate information to which they must adhere before undergoing day surgery.

4. It appears that the manner in which the day surgery facilities presently function varies in regards to organization, administration, and staffing patterns. However, the majority of hospitals use existing inpatient facilities such as the main operating room, admitting, and pre- and post-operative care areas for the provision of day surgery services.
5. The need assessment obtained by the three methods did vary. The results, however, were reasonably close and

the difference among the results should not underscore the merit of the findings which could be used as a guideline for future resource allocation in the realm of surgical services and for developing further research projects. The findings provide a better understanding of the present status, the potential growth, and the potential impact of day surgery services on the other components of the health care delivery system, namely the acute care bed supply. Hence, health care planners must take a broader look when planning for surgical services in Alberta to assure optimum resource allocation. More serious consideration should be given to achieve a balance among the three surgical service modes since, according to the systems approach to health planning, the enlargement of one sub-system at the expense of others or the achievement of efficiency in one part of the system will not necessarily accomplish the goals of the total system.

## 5.4 RECOMMENDATIONS

Based on the findings and conclusions of this study, the investigator offers the following recommendations:

1. That a policy be established to include day surgery services for all acute care hospitals rendering surgical services in Alberta. More specifically, the policy should provide guidelines for physical facilities and

equipment requirements, selection criteria for patients and procedures, and standards for staffing patterns, pre- and post-operative services, and funding. The policy should also address the issue of whether to allow the development of independent free-standing facilities which appear to be growing rapidly in the United States.

2. That a province-wide information system be implemented to record both day and inpatient surgical operations consistently and based on a common operational coding system.

3. Although much information can be drawn from this study, more research is recommended before more definite conclusions can be made. The following lists possible future studies regarding day surgery:

   (i) At the present time, there is very little data regarding the degree of clients' acceptance of day surgery. It is suggested, that a survey research project be undertaken to study clients' views towards the concept of day surgery (including clients who have or have not been exposed to such a service).

   (ii) Further research is needed to improve the assessment, classification, and service decision criteria for surgical cases.

   (iii) A Delphi research method be applied to: (a) developing criteria for selecting patients and procedures for day surgery and (b) providing an alternative approach for assessing day surgery service

needs in Alberta.

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APPENDIX A

Surgical Day-Care Program Visits to
Alberta's Public General, Federal General and Contract Hospitals[1]

| | 1974 | 1975 | 1976 | | |
|---|---|---|---|---|---|
| | Total Visits[2] | Total Visits[2] | Total Visits[2] | Surgical Suite[3] | Emergency Unit[3] |
| PUBLIC GENERAL HOSPITALS[4] | | | | | |
| Barrhead General | | 160 | 268 | 268 | |
| Bashaw General | | | 1 | 1 | |
| Brooks Health Centre | | 30 | 49 | 49 | |
| Calgary, Foothills Provincial General | 5,518 | 5,592 | 8,229 | 4,463 | 3,766 |
| Camrose, St. Mary's | | | 96 | 96 | |
| Cereal Municipal | | | 11 | 11 | |
| Claresholm General | | | 145 | 145 | |
| Edmonton General | | | 1,150 | 1,150 | |
| Edmonton, Dr. W.W. Cross Cancer Institute | | | 101 | 101 | |
| Edmonton, Misericordia | | 870 | 3,614 | 1,599 | 2,015 |
| Edmonton, Royal Alexandra | | | 3,648 | 3,648 | |

(Cont'd)

(Appendix A. Cont'd)

| | 1974 | 1975 | 1976 | | |
|---|---|---|---|---|---|
| | Total Visits[2] | Total Visits[2] | Total Visits[2] | Surgical Suite[3] | Emergency Unit[3] |
| Elk Point Municipal | | | 376 | 376 | |
| Fort McMurray Regional | | | 374 | 374 | |
| Hardisty General | | | 235 | | 235 |
| High River General | | | 66 | 66 | |
| Jasper, Seton General | | | 382 | 382 | |
| Lac La Biche General | | | 33 | 33 | |
| Lethbridge, St. Michael's General | | | 475 | 475 | |
| Manning Municipal | | | 44 | 44 | |
| Mannville Municipal | | | 56 | 56 | |
| Myrnam Municipal | | | 31 | | 31 |
| Redwater General | | | 19 | 19 | |
| St. Albert, Sturgeon General | | 192 | 297 | 297 | |

(Cont'd)

(Appendix A, Cont'd)

| | 1974 | 1975 | 1976 | | |
|---|---|---|---|---|---|
| | Total Visits[2] | Total Visits[2] | Total Visits[2] | Surgical Suite[3] | Emergency Unit[3] |
| Viking General | | | 21 | 16 | 5 |
| Wainwright General | | | 25 | 25 | |
| Westlock, Immaculata | | | 68 | 68 | |
| Whitecourt General | | | 15 | 15 | |
| TOTAL PUBLIC GENERAL HOSPITALS | 5,518 | 6,844 | 19,829 | | |
| FEDERAL HOSPITALS | | | | | |
| Edmonton, Charles Camsell | | 440 | 782 | 549 | |
| Medley, Canadian Forces Base - Cold Lake | | | 116 | | |
| TOTAL FEDERAL HOSPITALS | | 440 | 898 | | |

(Cont'd)

(Appendix A, Cont'd)

| | 1974 | 1975 | 1976 | | |
|---|---|---|---|---|---|
| | Total Visits[2] | Total Visits[2] | Total Visits[2] | Surgical Suite[3] | Emergency Unit[3] |
| CONTRACT HOSPITALS | | | | | |
| Bonnyville, Duclos | | | 124 | | |
| TOTAL CONTRACT HOSPITALS | | | 124 | | |
| TOTAL PUBLIC GENERAL, FEDERAL AND CONTRACT HOSPITALS | 5,518 | 7,284 | 20,851 | | |

[1]Source: Statistics Canada, "Annual Return of Health Care Facilities - Hospitals, Part One" 1974 to 1976. The above information is that reported by individual hospitals which completed an Annual Return for each year.

[2]Total number of visits to all units of Surgical Day-Care patients.

[3]Surgical Day-Care visits to the Surgical Suite and Emergency Units.

[4]Excludes the Lloydminster Hospital in Saskatchewan which provides hospital services to Alberta residents.

[5]The Blackfoot Indian Hospital at Gleichen was closed to inpatients on April 1, 1976.

APPENDIX B

The Twenty-Five Most Common
Day Care Surgical Procedures in British Columbia
(1976 - 1977)

| | ICDA-8 Codes | Procedures | No. of Cases 1977 | No. of Cases 1976 |
|---|---|---|---|---|
| 1. | 70.2, 70.3, 70.4, 70.9 | local excision and destruction of other lesions of uterus, cervix and supporting structures; dilation and curettage of uterus, trachelectomy; other operations on uterus, cervix | 12,095 | 11,912 |
| 2. | A4.6, A9.1 | cystoscopy and urethoscopy, with and without retrograde pyelogram | 7,938 | 6,941 |
| 3. | 74.6 - 74.9 | therapeutic abortion | 7,654 | 6,724 |
| 4. | 99.3, 99.4, 99.6, 99.9 | extraction of tooth, forceps; surgical removal of tooth; plastic repair of tooth; other dental surgery | 5,285 | 4,609 |
| 5. | A4.2 - A4.5 | laryngoscopy and tracheoscopy; bronchoscopy; esophagoscopy and gastroscopy; endoscopy of colon and rectum | 4,634 | 3,240 |
| 6. | 92.0, 92.1 | incision of skin and subcutaneous tissue; local excision of lesion of skin and subcutaneous tissue | 2,912 | 2,889 |
| 7. | 17.0, 17.9 | myringotomy; other operations on middle ear | 2,877 | 2,438 |

(Cont'd)

(Appendix B, Cont'd)

| | ICDA-8 Codes | Procedures | No. of Cases 1977 | No. of Cases 1976 |
|---|---|---|---|---|
| 8. | 60.1 | vasectomy | 2,474 | 1,976 |
| 9. | 65.2, A2.3 | mastectomy, partial; biopsy of breast | 2,459 | 2,341 |
| 10. | 68.2, 68.5 | salpingectomy, bilateral; ligation and division of fallopian tubes, bilateral | 1,936 | 1,454 |
| 11. | 88.2 | excision of lesion of muscle, tendon and fascia | 1,734 | 1,479 |
| 12. | 19.0 - 19.7 | excision of lesion of nose; section of nasal septum; turbinectomy; rhinoplasty and repair of nose; reduction of fracture of nasal bones; other operations on nose; radical sinusotomy, maxillary; other sinusotomy | 1,621 | 1,504 |
| 13. | 88.9 | other operations on muscle, tendon, fascia and bursa | 849 | 741 |
| 14. | 80.8, 81.6 | removal of fixation device (internal); traction and external fixation device without manipulation for reduction | 800 | 616 |
| 15. | 13.6 | other photocoagulation of retina | 737 | 466 |
| 16. | 78.1 | dilation and curettage after delivery or abortion | 727 | 635 |
| 17. | 83.0, 83.3, 84.0, 84.4 | closed reduction of: ankle fracture; wrist fracture; elbow, knee or shoulder region fracture; other bone site fracture | 696 | 608 |

(Cont'd)

(Appendix B, Cont'd)

| | ICDA-8 Codes | Procedures | No. of Cases 1977 | No. of Cases 1976 |
|---|---|---|---|---|
| 18. | A1.8 | biopsy of stomach and intestines | 686 | 314 |
| 19. | 57.1, 57.5 | meatotomy; dilation of urethra | 658 | 668 |
| 20. | 61.2 | circumcision | 652 | 534 |
| 21. | 56.1 | local excision and destruction of lesion of bladder, transurethral approach | 613 | 538 |
| 22. | 21.1 - 21.3 | tonsillectomy with or without adenoidectomy; adenoidectomy without tonsillectomy | 591 | 415 |
| 23. | 92.4 | removal of nail, nailbed or nailfold | 473 | 453 |
| 24. | A5.3 | peritoneoscopy | 459 | 290 |
| 25. | 92.2 | wide or radical excision of lesion of skin | 384 | 295 |
| TOTAL | | | 61,944 | 54,080 |
| Percentage of Total Day Care Surgical Load | | | 81.3 | 82.4 |

APPENDIX C

The List of
Possible Out-Patient Surgical,
Medical, and Diagnostic Procedures
Approved by the Alberta Medical Association,
1980

Each hospital should decide its own priorities and determine its own list of procedures that may safely be carried out in a day surgery unit.

The following list of procedures are those that have been performed on a day surgery basis. The performance of any of these procedures in a day surgery unit is always dependent on the facility, resources and staff (medical and nursing) available.

GENERAL SURGERY, CHEST SURGERY

Abscess, incision and drainage
Baker's cyst, excision*
Breast masses, excision
Bronchoscopy
Carbuncle, excision
Cervical node biopsy
Colonoscopy
Colostomy revision*
Debridements
Fistulectomy
Foreign body, removal
(with or without x-ray)
Frenulectomy, tongue
Gastroscopy
Haemorrhoidectomy*
Haemorrhoidectomy, thrombotic
Herniorrhaphy, umbilical - small
Laparoscopy
Lipoma, excision - small
Lymph node biopsy - superficial
Mediastinoscopy
Muscle biopsy
Orchidectomy
Orchidopexy*
Pilonidal cystectomy
Polypectomy, rectal
Rectal biopsy
Scalene node biopsy
Skin lesions, excision
Herniorrhaphy, inquinal
infant - uni or bilateral
adult - uni or bilateral*
Thyrogeossal duct cyst*
Varicocelectomy
Varicose vein ligation
Varicotomy

## GYNAECOLOGY

Abortion, therapeutic
Bartholin cystectomy
Cervical amputation (Stermdorf)
Cervical cone
Cautery vaginal cyst
Colpotomy, diagnostic
Condylomata Acuminata (treatment of)
Cryotherapy (alone)
Cryotherapy with biopsy
Culdocentesis
Culdoscopy
Dilation and curettage
Episiotomy
Excision adhesions of clitoris
Examination under anaesthesia
Hymenotomy
Hysteroscopy
Hysterosalpingogram
Intrauterine contraceptive device, removal
Laparoscopy
Perineorrhaphy*
Polypectomy, cervical
Saline injection intrauterine therapeutic
Tubal coagulation of ligation
Vulva biopsy

## ORAL SURGERY

Cystectomy
Fracture, closed reduction, uncomplicated
Odontectomy, uncomplicated
Odontectomy, surgical
Periodontic surgery
(full or partial)

## OPHTHALMOLOGY

Aspiration of aqueous
Biopsy, conjunctiva or cornea
Cataract by phakoemulsification
Canthus excision
Cryotherapy
Discission
Ectropion and entropion
Enucleation*
Hordeolum, incision and curettage
Iridectomy
Keratotomy
Lacrimal duct probing or reconstruction
Myotomy - recession or resection
Photocoagulation
Pterygium
Strabotomy, pediatric
Tarsorrhaphy
Therapeutic retrobulbar injections
Curettage or cauterization of corneal ulcer
Chalazion
Cryoretinopexy

## ORTHOPAEDIC AND NEUROSURGICAL

Arthrotomy, Meniscectomy*
Arthrodesis (phalanges, other joints)
Arthroscopy
Bone graft
Bone reconstruction
Bunion operation*
Bursae, removal of (olecranon)
Capsulectomy
Carpal tunnel decompression
Carpal tunnel ligament release
Cast change with manipulation
Exostosis, excision
Fasciectomy (finger, palm)
Fingernail or toenail removal
Fracture, closed reduction (with or without x-ray)
Ganglionectomy
Hammertoes with tenotomies and resection of bones
Hardware, removal
Hardware, removal, hip
Hydrocelectomy
Injection of intervertebral disc
Intercostal neurectomy
Manipulation of joints (with or without x-ray)
Medial ligament, knee repair of*
Metatarsal heads, excision
Morton's neuroma
Nerve repair
Neuroma (other)
Olecranon spur, excision
Phalangectomy
Planter wart, excision
Tendon repair
Tenosynovectomy
Tenotomy, hand or foot
Trigger finger release
Torticollis repair
Ulnar nerve transfer

## OTOLARYNGOLOGY

Adenoidectomy and myringotomy
Antral puncture
Arch bars, removal or application
Branchial arch appendages, excision
Bronchoscopy
Cystoscopy
Esophagoscopy
Ethmoidectomy
Excision, foreign bodies
Excision, lesions, skin tags, cysts
Excision, parotid and submaxillary stones
Haemangioma, nostril
Inferior turbinate fracture
Jaw, wiring of

Laryngoscopy
Laryngeal polypectomy
Limited rhinoplasty
Mastoidectomy*
Myringoplasty
Myringotomy with or without tubes
Nasal polyp, removal
Nose, closed fracture reduction
Otoscopy
Pedicle flap, transfer
Polypectomy, nasal
Septal reconstruction
Stapedectomy
Sub-mucous resection
Tonsillectomy, with or without adenoidectomy*
Tympanoplasty
Zygoma, reduction

PLASTIC SURGERY

Basal cell, carcinoma, excision
Blepharoplasty (upper or lower or combined)
Cyst excision
Clef lip repair
Dermabrasion (partial or full)
Gynecomastia, excision
Hair transplantation
Mammoplasty, augmentation or revision
Meloplasty
Otoplasty
Rhinoplasty
Rhytidoplasty
Scar revisions and relaxations
Skin grafts, minor
Skin lesions, excision, minor
Xanthoma, excision

UROLOGY

Carbuncle, excision
Circumcision
Cystectomy, Skene's Duct
Cystoscopy
Dorsal slit
Fulguration of bladder neck
Inguinal/Scrotal abscess, incision and drainage
Litholapaxy
Meatotomy
Prostate biopsy
Retrograde studies (i.e. Pyelograms)
Testes, excision
Urethral dilation

Urethroscopy
Vasectomy
Vasograms

MEDICAL AND DIAGNOSTIC PROCEDURES

Bone marrow aspiration and/or biopsy
Cardioversion
Colonoscopy
Electroshock therapy
Esophogeal dilatation
Gastroscopy
Laparoscopy
Liver biopsy
Myelogram
Paracentesis
Proctosigmoidoscopy
Renal biopsy
Spinal tap

* These procedures require special consideration in exceptional circumstances

# APPENDIX D

## PHYSICIANS QUESTIONNAIRE

DIVISION OF
HEALTH SERVICES ADMINISTRATION
13-103 CLINICAL SCIENCES BUILDING
TELEPHONE (403) 432-6407 AND 432-6408

FACULTY OF MEDICINE
THE UNIVERSITY OF ALBERTA
EDMONTON, ALBERTA, CANADA
T6G 2G3

AN ALBERTA DAY SURGERY SURVEY

Physician Questionnaire

Dear Doctor:

This is a survey to gather some information about physicians' attitudes and opinions on Day Surgery (or Ambulatory Surgery) services (excluding routine minor procedures performed in a physician's office). The information thus gathered will be used in a study to assess the need for Day Surgery services in Alberta.

The survey is being conducted by a research team under the auspices of the Division of Health Services Administration, Faculty of Medicine, at the University of Alberta. The enclosed questionnaire is being sent to randomly selected Alberta physicians, who may or may not have had previous dealings with Day Surgery programmes. In order for this information to be of any value, it is essential that a reply from all the selected physicians is received.

We would appreciate it if you take a few moments to complete and return the attached questionnaire as quickly as possible. A stamped envelope, addressed to our research assistant, has been provided for your convenience.

Confidentiality of your answers to this questionnaire is assured. The number printed at the bottom of the next page is to assist in the control of repeat mailing for follow-up. If you wish, you may obliterate it.

Thank you for your cooperation.

Sincerely,

K.S. Bay
Associate Professor

KSB/jl

DIVISION OF
HEALTH SERVICES ADMINISTRATION
13-103 CLINICAL SCIENCES BUILDING
TELEPHONE (403) 432-6407 AND 432-6408

FACULTY OF MEDICINE
THE UNIVERSITY OF ALBERTA
EDMONTON, ALBERTA, CANADA
T6G 2G3

November 16, 1981

AN ALBERTA DAY SURGERY SURVEY

*Physician Questionnaire*

*Dear Doctor:*

*This letter is with reference to the Physician Questionnaire which we mailed to you in mid October 1981. As mentioned in the covering letter accompanying the questionnaire, we are gathering some vital information about physicians' attitudes and opinions on Day Surgery Services.*

*In order to enhance the validity of this study, it is essencial that a reply from all the selected physicians is received. However, we have not yet received your completed questionnaire.*

*We provided you with another questionnaire form to complete and return in the event that the previous questionnaire did not reach you or somehow got lost.*

*We would appriciate it very much if you would complete and return the questionnaire as soon as possible, thus preventing the sending of furthur follow-up letters.*

*Thank you very much for your attention on this request and anticipated cooperation.*

*Sincerely,*

K.S. Bay
Associate Professor

KSB/jl

1

# AN ALBERTA DAY SURGERY SURVEY

Physician Questionnaire

*Day Surgery has provided for many years an alternative to inpatient care for both adults and children. Day Surgery, when fully developed, is a program comprised of pre-admissions workup and the performance of operations and procedures in which patients are admitted and discharged on the same day. An organized postoperative care service is available when needed. Day Surgery is distinct from the minor surgical procedures performed in a physician's office, since such procedures require only minimal amount of care and facilities.*

## SECTION A. BACKGROUND INFORMATION

**For each of the following questions, please check (✓) the most appropriate response or comment in the space provided.**

1. Which age group do you belong to?

   1. ( ) Under 35 years
   2. ( ) 35 - 44 years
   3. ( ) 45 - 54 years
   4. ( ) 55 - 64 years
   5. ( ) 65 years and over

2. Which of the following best describes your medical practice?

   1. ( ) Solo practice
   2. ( ) Group practice
   3. ( ) Teaching
   4. ( ) Administration
   5. ( ) Other (please specify) _____

   _____

3. Approximately how long has it been since you obtained your Medical Degree (M.D. or equivalent)?

   1. ( ) 0 - 2 years
   2. ( ) 3 - 5 years
   3. ( ) 6 - 10 years
   4. ( ) 11 - 20 years
   5. ( ) 21 years and over

4. How many Day Surgery cases on the average do you operate on and/or refer to specialists who perform the Day Surgery? (Exclude minor routine procedures performed in a physician's office.)

   1. ( ) none
   2. ( ) 1 - 5 cases per month
   3. ( ) 6 - 10 cases per month
   4. ( ) 11 - 20 cases per month
   5. ( ) over 20 cases per month

5. How would you describe your participation in Day Surgery?

   1. ( ) A physician performing the operations
   2. ( ) A referral physician to specialists involved in a Day Surgery program
   3. ( ) Both 1 and 2
   4. ( ) Not involved
   5. ( ) Other (please specify) _____

over ⟶

## SECTION B. ATTITUDES TOWARD DAY SURGERY

*In this section we would like to know your general ideas about Day Surgery. Please answer the questions without any particular Day Surgery program in mind and regardless of your involvement. For each of the following statements, please check (✓) the appropriate response in the space provided.*

| | Agree | Disagree | Don't Know |
|---|---|---|---|
| 1. Some surgery patients currently admitted to hospital could receive the same quality of care in a day surgery unit, provided there are well established programs. | ( ) A | ( ) D | ( ) DK |
| 2. A majority of patients who are clinically suitable candidates for Day Surgery would prefer the care provided through day surgery services, rather than through inpatient care. | ( ) A | ( ) D | ( ) DK |
| 3. Day Surgery provides a means to lessen much of the patient's psychological stress due to hospitalization. | ( ) A | ( ) D | ( ) DK |
| 4. Day Surgery implies a shift in medical responsibility for postoperative care from members of hospitals' surgical or specialist teams to the providers of the community based health services such as practitioners and home care nurses. | ( ) A | ( ) D | ( ) DK |
| 5. The delivery of care through Day Surgery services would allow for more effective use of the surgeon's time. | ( ) A | ( ) D | ( ) DK |
| 6. Day Surgery services should be reserved only for the hospitals with high occupancy rates. | ( ) A | ( ) D | ( ) DK |
| 7. Most of the clinically eligible patients for Day Surgery (or persons assisting the patients at home) are not capable of managing responsibilities, such as following preoperative instructions and the postoperative care which takes place at their home. | ( ) A | ( ) D | ( ) DK |
| 8. The average hospital ward compares poorly with most home environments in terms of comfort, menu, and privacy. | ( ) A | ( ) D | ( ) DK |
| 9. If an inpatient surgical bed was available for a patient who could undergo the surgery on an ambulatory basis, YOU would prefer the patient to be admitted as an inpatient rather than as a Day Surgery patient. | ( ) A | ( ) D | ( ) DK |
| 10. All active treatment hospitals with surgical facilitites in Alberta should provide some form of Day Surgery services. | ( ) A | ( ) D | ( ) DK |
| 11. Day Surgery reduces the patient's chance of hospital-acquired infections. | ( ) A | ( ) D | ( ) DK |
| 12. The main risks of Day Surgery are associated with the time of induction of and arousal from anaesthesia rather than from the surgery per se or postoperative events. | ( ) A | ( ) D | ( ) DK |
| 13. Day Surgery will likely create an increased demand for physicians' house calls and/or visits to the emergency departments. | ( ) A | ( ) D | ( ) DK |
| 14. In the event that YOU had to undergo surgery, YOU would opt for Day Surgery if such a service was an available and medically feasible alternative to YOU. | ( ) A | ( ) D | ( ) DK |
| 15. The demand for Day Surgery programs will increase in Alberta within the next five years. | ( ) A | ( ) D | ( ) DK |
| 16. The provincial government should give Day Surgery programs a higher priority when allocating health care funds. | ( ) A | ( ) D | ( ) DK |
| 17. To promote the development and use of Day Surgery programs, the provincial government should provide financial incentives to hospitals. | ( ) A | ( ) D | ( ) DK |
| 18. To promote the development and use of Day Surgery programs, the provincial government should provide fee incentives to physicians. | ( ) A | ( ) D | ( ) DK |

FINE PRINT

SECTION C.

Questions About the Physical Facilities and Services of a Day Surgery Program

*In the following questions, we are interested in your ideas of where Day Surgery programs should be offered, as well as what types of facilities and services should exist with such programs.*

1. In which of the following locations should Day Surgery take place? (You may check (✓) more than one response.)

   1. ( ) A hospital
   2. ( ) A free standing Day Surgery center (better known as surgicenters)
   3. ( ) A hospital-linked free standing day surgery center
   4. ( ) Other (please specify) _____

   _____

2. A Day Surgery unit located in a hospital must have the following separate facilities. (You may check (✓) more than one response.)

   1. ( ) Its own operating room
   2. ( ) Its own post-anaesthetic recovery room
   3. ( ) Its own postoperative observation area
   4. ( ) Its own admitting services
   5. ( ) Other (specify) _____

   _____

3. Day Surgery programs may include postoperative care services. What is your reaction to the different alternatives for the postoperative care services mentioned below? (Circle only one appropriate number for each item.)

| | Very Favourable | Favourable | Unfavourable | Very Unfavourable |
|---|---|---|---|---|
| a. A compulsory home nursing service | (1) | (2) | (3) | (4) |
| b. Ad hoc postoperative nursing visits as assigned by the patient's physician | (1) | (2) | (3) | (4) |
| c. A 24-hour 7-days-a-week telephone contact service | (1) | (2) | (3) | (4) |

d. Other (please specify) _____

SECTION D.
POTENTIAL NEED FOR DAY SURGERY SERVICES

*We acknowledge the fact that the surgical patient's hospital stay depends on his/her clinical condition as well as other factors. Based on your past clinical experience or other criteria please estimate the percent range of surgical cases you think may be performed on a Day Surgery basis for the categories of operations listed below (assuming the existence of an appropriate Day Surgery program). Should you think that you do not have enough exposure to a particular category of operations, please leave it blank and proceed to the next item.*

*An alternative list of categories of operations may be included for certain specialties. If you wish, you may fill out both lists but it is only requested that you respond to the list outlining the categories of operations related to your specialty.*

| | Minimum % | Maximum % |
|---|---|---|
| All surgical operations (requiring local, regional or general anaesthetics) | ( ) | ( ) |
| All diagnostic and medical procedures | ( ) | ( ) |
| All pediatric surgery | ( ) | ( ) |

If you wish to estimate for other categories of operations, please specify the category of operations or procedures in the space provided below.

| Examples: Category | Minimum % | Maximum % |
|---|---|---|
| Neurosurgery | ( 5% ) | ( 10% ) |
| or Tonsillectomy | ( 60% ) | ( 70% ) |
| or Oral Surgery | ( 50% ) | ( 90% ) |
| _____ | ( ) | ( ) |
| _____ | ( ) | ( ) |
| _____ | ( ) | ( ) |

FINE PRINT

| Urology | Minimum % | Maximum % |
|---|---|---|
| 1. All operations performed on the urinary system | ( ) | ( ) |
| 2. Operations performed on the urinary bladder | ( ) | ( ) |
| 3. Operations performed on the urethra | ( ) | ( ) |
| 4. Other operations (please specify): _____ | ( ) | ( ) |

| General Surgery | Minimum % | Maximum % |
|---|---|---|
| 1. All surgical procedures | ( ) | ( ) |
| 2. All repair of hernia | ( ) | ( ) |
| ( ) infant | ( ) | ( ) |
| ( ) adult | ( ) | ( ) |
| 3. Hemorrhoidectomy | ( ) | ( ) |
| 4. Operations performed on the appendix | ( ) | ( ) |
| 5. Other (please specify) _____ | ( ) | ( ) |

| Gynecological Surgery | Minimum % | Maximum % |
|---|---|---|
| 1. All gynecological surgery | ( ) | ( ) |
| 2. Dilation and curettage of the uterus | ( ) | ( ) |
| 3. Aspiration curettage of the uterus | ( ) | ( ) |
| 4. Other (please specify) _____ | ( ) | ( ) |

| Plastic Surgery | Minimum % | Maximum % |
|---|---|---|
| 1. All operations involving plastic surgery | ( ) | ( ) |
| 2. Operations performed on the musculo-skeletal system | ( ) | ( ) |
| 3. Operations performed on the skin | ( ) | ( ) |
| 4. Operations performed on the breast | ( ) | ( ) |
| 5. Other operations (please specify) _____ | ( ) | ( ) |

| Orthopaedic Surgery | Minimum % | Maximum % |
|---|---|---|
| (Excluding nasal bones and accessory sinuses.) | | |
| 1. All orthopedic surgery | ( ) | ( ) |
| 2. All operations performed on bones (including reduction of facial fractures, operations on facial bones and other bones) | ( ) | ( ) |
| 3. Reduction of fracture and dislocation | ( ) | ( ) |
| 4. Incision and excision of joint structures | ( ) | ( ) |
| 5. Repair and plastic operations on joint structures | ( ) | ( ) |
| 6. Operations on all muscles, tendons, fascia, and bursa | ( ) | ( ) |

| Ophthalmology | Minimum % | Maximum % |
|---|---|---|
| 1. All operations performed on the eye | ( ) | ( ) |
| 2. Operations performed on the lacrimal apparatus | ( ) | ( ) |
| 3. Operations performed on the eyelids | ( ) | ( ) |
| 4. Operations performed on the occular muscles | ( ) | ( ) |
| 5. Operations performed on the conjunctive | ( ) | ( ) |
| 6. Operations performed on the cornea | ( ) | ( ) |

| Otorhinolaryngology | Minimum % | Maximum % |
|---|---|---|
| 1. All operations performed on ear, nose, and throat | ( ) | ( ) |
| 2. Operations performed on nose and accessory sinuses | ( ) | ( ) |
| 3. All operations performed on teeth and supporting structures | ( ) | ( ) |
| 4. Operations performed on the tongue, salivary glands, and ducts | ( ) | ( ) |
| 5. Operations performed on tonsils and adenoids | ( ) | ( ) |
| 6. Operations performed on the larynx | ( ) | ( ) |

4

Are there any additional comments you wish to make concerning Day Surgery? Please use the space provided below.

_____

_____

_____

_____

_____

Thank you. We appreciate the time and effort you have spent on this study. The results will be useful for the future planning of Day Surgery programs in Alberta. The special envelope provided for the return of this questionnaire requires no postage.

# APPENDIX E

## HOSPITAL QUESTIONNAIRE

DIVISION OF
HEALTH SERVICES ADMINISTRATION
13-103 CLINICAL SCIENCES BUILDING
TELEPHONE (403) 432-6407 AND 432-6408

FACULTY OF MEDICINE
THE UNIVERSITY OF ALBERTA
EDMONTON, ALBERTA, CANADA
T6G 2G3

AN ALBERTA DAY SURGERY SURVEY

Dear Administrator,

This is a survey to examine the current status of Day Surgery (or ambulatory surgery) programs in Alberta. The information thus gathered will be used in a study to assess the need for Day Surgery services in this province.

The survey is being conducted by a research team under the auspices of the Division of Health Services Administration, Faculty of Medicine, at the University of Alberta. The enclosed questionnaire is being sent to all Chief Executive Officers of acute care hospitals in Alberta. In order for this information to be of any value, it is essential that a reply from you is received. You may pass on the questionnaire to other individuals working in your hospital to gather some of the requested information.

We would appreciate it if you take some time to complete and return the attached questionnaire as quickly as possible. A stamped envelope, addressed to our Project Co-ordinator has been provided for your convenience.

Confidentiality of your answers to this questionnaire is assured.

Your cooperation in helping with this survey will be greatly appreciated.

Sincerely,

K.S. Bay
Associate Professor

AN ALBERTA DAY SURGERY SURVEY

*Day Surgery has proviaed for many years an alternative to inpatient care for both adults and children. Day Surgery, when fully developed, is a program comprised of pre-admission workup and the performance of operations and procedures in which patients are admitted and discharged on the same day. An organized post-operative care service is available when needed. Day Surgery is distinct from the minor surgical procedures performed in a physician's office, since such procedures require only minimal amount of care and facilities.*

For each of the following questions, please check ( ✓ ) the most appropriate response, or comment in the space provided.

1. Does your hospital provide any Day Surgery services?

   Yes ( )  No ( )

   If "yes", please skip to question 3.

   If "no ", please answer only question 2,3 and return the questionnaire promptly in the enclosed envelope.

2. What reasons are there for not providing Day Surgery services at your hospital? (You may check ( ✓ ) more than one response.)

   ( ) Not a popular concept among the Medical Staff

   ( ) The government does not provide the hospital with financial incentives to develop such a service.

   Other reasons (specify) _____

   _____

   _____

3. Do you expect that the demand for Day Surgery services will increase at your hospital in the next five years, from the :

   | | | |
   |---|---|---|
   | Patients | Yes ( ) | No ( ) |
   | Medical Staff | Yes ( ) | No ( ) |

4. Approximately how many years has your hospital been rendering Day Surgery services?
   ( ) years

5. Would you describe the Day Surgery services offered at your hospital as a fully developed Day Surgery program?

   Yes ( ) No ( )

   If "no", please briefly state what the program lacks?

   _____

   _____

6. How many beds are allocated for Day Surgery use?

   ( ) beds

   Are these beds also used for other purposes?

   Yes ( ) No ( )

   If yes, Explain _____

7. Approximately how may Day Surgery cases per <u>year</u> are performed in your hospital?

   ( ) information not available
   ( ) 0 - 99 cases
   ( ) 100- 499 cases
   ( ) 500- 999 cases
   ( )1000-1999 cases
   ( )2000-2999 cases
   ( )3000-5000 cases
   ( ) If over 5000 cases please specify the approximate number of cases ( ) cases.

8. Does your hospital have a list of surgical procedures which can and/or are performed on a Day Surgery basis in your hospital?
   Yes ( ) No ( ) (Please attach such a list)

9. Does your hospital have a protocol for selecting Day Surgery patients?

   Yes ( ) No ( ) (Please attach a list of such protocol.)

10. Does the Day Surgery program have its <u>own</u> facilities, such as:

| | | |
|---|---|---|
| Operating Room? | Yes ( ) | No ( ) |
| Post anaesthetic recovery room? | Yes ( ) | No ( ) |
| Admitting services? | Yes ( ) | No ( ) |
| Postoperative observation area? | Yes ( ) | No ( ) |

   Other (specify) _____

11. In which of the following locations do Day Surgery operations take place? (You may check ( ✓ ) more than one response.)

( ) The hospital's main operating room ( O.R.)
( ) A separate O.R. for Day Surgery operations
( ) The Emergency Department's O.R. facility
( ) Outpatient department
Other (specify)_____

12. Listed below are three broad categories of operations and procedures done on a Day Surgery basis. Please rank each category to indicate which category of Day Surgery operations and procedures are performed tne least frequently and those which are performed the most frequently in your hospital. Please circle the most appropriate number. (1 refers to least frequent, and 3 refers to most frequent.)

| | least | | most |
|---|---|---|---|
| Surgical operations requiring general anaesthetics | 1 | 2 | 3 |
| Surgical operations requiring local or regional anaesthetics | 1 | 2 | 3 |
| Diagnostic and medical procedures requiring some local anaesthetics or sedatives | 1 | 2 | 3 |

13. Do Day Surgery patients receive pre-operational instruction from the:

Hospital? Yes ( ) No ( )
Doctor? Yes ( ) No ( )

14. The post-operative care services offered to a Day Surgery patient is best described as the following (you may check ( ✓ ) more than one response) :

( ) No post-operative care services
( ) Instructions to the patient to contact the hospital if further care is required
( ) A compulsory home nursing service
( ) Ad hoc post-operative nursing visits as assigned by the patient's physician
( ) A 24-hour 7-days-a-week telephone contact system
( ) Other (specify) _____

15. Do you have a nursing staff who work only with the Day Surgery program?

Yes ( ) No ( )

16. How are Day Surgery cases recorded by the Medical Records' technicians on to the PAS (Professional Activities Studies) separations abstract (or an equivalent patient information system)?

( ) As a 1-day length of stay
( ) As an outpatient procedure
( ) Other (specify) _____

17. Are there any additional comments you wish to make concerning Day Surgery? Please use the space provided below.

_____

_____

_____

_____

_____

18. Please list the name of person (s) from whom more information about your hospitals' day surgery services can be obtained.

| NAME | TITLE | PHONE |
|---|---|---|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

*Thank you very much for completing this questionnaire, the contribution of your time ana effort is greatly appreciatea. Please return promptly in the enclosea envelope together with the copies of the Lists referred in Items 8 ana 9.*

APPENDIX F

Alberta Hospitals Offering
Day Surgery Services

| Size (beds) | Hospital Name | No. of Day Surgery Operations per Year |
|---|---|---|
| less than 25 | Berwyn | less than 100 |
| | Cereal Municipal | less than 100 |
| 25 - 49 | Banff Mineral Springs | less than 100 |
| | Bashaw General | less than 100 |
| | Beaverlodge Municipal | less than 100 |
| | Bow Island General | less than 100 |
| | Didsbury Municipal | less than 100 |
| | Drayton Valley General | 100 - 499 |
| | Fort Saskatchewan | N/A |
| | Grande Cache General | less than 100 |
| | Islay Municipal | less than 100 |
| | Seton General, Jasper | less than 100 |
| | Leduc General | 500 - 999 |
| | Olds Municipal | N/A |
| | Provost Municipal Health Care Centre | less than 100 |
| | Redwater General | less than 100 |
| | Rimbey General | less than 100 |
| | Rocky Mountain House | less than 100 |
| | Central Peace General, Spirit River | less than 100 |

(Cont'd)

(Appendix F, Cont'd)

| Size (beds) | Hospital Name | No. of Day Surgery Operations per Year |
|---|---|---|
| | Valleyview General | 100 - 499 |
| | The Wainwright & District D. Health Care Complex | less than 100 |
| 50 - 99 | Barrhead | 100 - 499 |
| | St. Louis, Bonnyville | less than 100 |
| | Brooks Health Centre | 100 - 499 |
| | Drumheller General* | less than 100 |
| | W.W. Cross Cancer Institute* | 2,000 - 2,999 |
| | St. John's, Edson | 100 - 499 |
| | Fairview General | 100 - 499 |
| | Macleod Municipal | N/A |
| | Hanna General | less than 100 |
| | High Prairie Regional* (Health complex) | 100 - 499 |
| | Innisfail Municipal | 100 - 499 |
| | Lac La Biche General | less than 100 |
| | Archer Memorial, Lamont | less than 100 |
| | Sacred Heart, McLennan | 100 - 499 |
| | The Pincher Health Care Centre | N/A |
| | Ponoka General* | N/A |
| | Taber General | 100 - 499 |
| | St. Joseph's General | N/A |
| | Immaculate | 100 - 499 |

(Cont'd)

(Appendix F, Cont'd)

| Size (beds) | Hospital Name | No. of Day Surgery Operations per Year |
|---|---|---|
| 100 - 299 | Alberta Children's Provincial General | over 5,000[1] |
| | Colonel Belcher, Calgary* | N/A |
| | Rockyview General* | 1,000 - 1,999 |
| | St. Mary's, Camrose | 100 - 499 |
| | Charles Camsell | 1,000 - 1,999 |
| | Fort McMurray | 1,000 - 1,999 |
| | Grande Prairie General | 1,000 - 1,999 |
| | Lethbridge Municipal | 500 - 999 |
| | St. Michael's General, Lethbridge* | 1,000 - 1,000 |
| | Red Deer Regional Hospital | 3,000 - 5,000 |
| | Sturgeon General* | 1,000 - 1,999 |
| | Wetaskiwin | 100 - 499 |
| 300+ | Calgary General | 3,000 - 5,000 |
| | Foothills Provincial General* | 3,000 - 5,000 |
| | Holy Cross, Calgary* | 1,000 - 1,999 |
| | Edmonton General* | 2,000 - 2,999 |
| | Misericordia* | 3,000 - 5,000 |
| | University of Alberta* | 1,000 - 1,999 |
| | Lloydminster Hospital | less than 100 |
| | Canadian Forces Hospital | less than 100 |

[1]Information was not available but provided as a projection.

(Cont'd)

(Appendix F, Cont'd)

Note, the asterisk * indicates that the hospital has available both a protocal for selecting day surgery patients and a list of procedures done on a day visit basis.

APPENDIX G

HOSPITAL SURVEY

The number in parentheses following the comment indicates the number of respondents who made similar remarks.

General Comments:

"A more concrete policy Alberta wide for day surgery is needed".

"Would like to see some policies established for smaller rural hosiptals".

"Government no longer recognizes outpatient services so there is no incentive to extend the services. I believe it is cheaper but we must get funding e.g. these patients need to be fed but our dietary department is penalized for serving some".

"If funding for additional staff became available we could do more day surgery. Our new hospital includes a 24 day surgical beds".

"Foresee a great increase in the future".

"Day surgery is relatively inexpensive and should be encouraged. Services can be supplied in small hospitals but some form of compensation should be built-in to the budget".

"Our day surgery situation is not a well structured system with the facilities we have to work with".

"This hospital is equipped with hostel facilities. We would like to see these facilities used for patients from isolated areas".

"My comments are very favourable about this program. To me it is utilization of staff and facilities in the most economical and efficient way. The benefits for patient care are equally beneficial to the inpatients, and with post-operative surgerical care follow-up there is very little risk to the patients"

"Good utilization of hospital beds and facility".

"The surgeon in our small facility promotes day surgery, possibly because of the shortage of active treatment beds".

"I feel that these services would be used more if our occupancy rate were higher. It is satisfactory however".

"Our day surgery is very limited as we have only a 19 bed active treatment facility and no anaesthestist on staff".

"There is a float nurse covering this area on a daily basis (i.e) Monday to Friday".

"Our day surgery services (a) requiring local anaesthetic, and (b) requiring general anaesthetic; are using facilities which are grossly inadequate for our needs. The emergency department is over crowded as are the areas used for holding post-operative patients for observation. The well-being of patients is not being jeopardized but working conditions are extremely difficult".

"Most of the patients in day surgery are given a general anaesthetic and are told not to drive a car for 24 hours.

Therefore they must have a responsible person to take them home. If the patient is not "fit" to be discharged by 3 p.m. then he is admitted as a regualr patient and is transferred to a surgical floor. This is seldom necessary".
"Our day surgery is not a formal plan. Mainly because as we were starting it some four years ago, the surgeon left and for the last two years we have had no surgeons. We would very much like to formulate a day care plan when our surgeon arrives in 1982".
"This program is new, the full impact of which is not presently known. Can foresee this developing further".
"We are at present planning a new hospital which will have four stretcher beds allocated for day surgery only. Surgery will continue to be performed in the operating theater".
"Patients are not seen by nursing staff prior to admission due to admission procedure and preparations, lack of time. The amount the patient retains is in question. Medical staff tend to instruct the patient too fast".
"We should have seperate facilities and staff, more beds allocated for day surgery and a list of procedures that must be done as out patients".
"Day surgery has worked well for us especially for children".
"Súrgical cases requiring local anaesthesia have been done here on an outpatient basis for many years. The trend towards day surgery requiring general anaesthetics has grown steadily over the past eight years".

Comments about what the present day surgery services lack:

(1) Physical Facilities:
"Facilites such as beds, admitting, and laboratory should be aimed solely for the purpose of day surgery"(2).
"Day surgery cases are carried out on an outpatient basis and yet are placed on an OR schedule with inpatient cases".
"Ability to admit on a day basis without going through the "whole" admitting procedures including charts".
"It is not a separate unit presently services with emergency and outpatient facilities as well as our recovery room"(2).
"A fully developed program does not exist. Day surgery patients are admitted to the general surgical ward and are cared for by the unit staff. Lack of separation from regualr patients. Feel that day surgery should not share staff and facilities with other patient care area's"(6).
"Primarily we do not have adequate physical facilities to execute the program properly"(2).
"Day surgery beds".
"We do very little because we lack the physical capabilities to make it feasible"(2).
"Physical space does not allow for more than two patients at one time".
"Our only space for a holding area is a 4 bed inpatient room and we have to maintain a liking of 6 cases per day".
"Recovery room is too small".

(2) Guidelines and Definitions for Day Surgery:
"Lack of pre-operative policy".
"Improved classification of surgery which could be done on a day surgery basis".
"No policies or procedures established".
"Specific guidelines as to what is day surgery and booked accordingly".

(3) Staff:
"We do not have sufficient medical and nursing people to fully develop our day surgery".
"No qualified surgeon on staff".

(4) Other:
"Concise effective charts".
"Consistent usage of alloted beds".
"More teaching and follow up".
"Our day beds are not set up properly; no oxygen and suction outlets".

Suggestions For Post-Operative Care Services:
"Instruction given to the patient to contact the physician responsible for his/her care".
"Home care or other agencies are involved if necessary but not on a routine basis".
"All patients receive recalls for futher reassessment and treatment".
"Unit phone number given to patient. Selected checks are also made by phone".
"Patients remain in hospital a minimum of four hours".
"Typed standing instructions pertinent to a specific procedure given to patient on discharge".

Other usage for day surgery beds:
(1). Medical and or surgical beds.
(2). ICU beds.
(3). Use stretchers.
(4). Outpatient services.
(5). Emergency department.
(6). Other: gastric analysis, overflow from psychiatry, prolonged examinations on tests such as gastroscopies, specialized lab test or for blood transfussions, chemotherapy, I.V. therapy, transfer of patients, etc.

Reasons for not providing day surgery services:
"Do not perform surgery in our hospital".
"The absence or shortage of health personnel (i.e. medical and nursing personnel) to set up such a unit"(3).
"A lack of or inadequate facilities to accomodate a day surgery program", e.g."This is a small twelve bed hospital without facilities for day surgery such as space, equipment and anaesthesia", "no facilities to handle patients", "we do not have the space to provide this service without renovation (presently planned)", "we do not really have the

beds available but hope in our new hospital", "no anaesthetic facilities", and "we do not have the physical facilities for day surgery nor the budget or staff".

Other reasons for not offering day surgery are:
"Day surgery comes under outpatients - outpatient departments are not recognized as an expense centre".
"We do not give general anaesthetics".
"In rural areas the risk is too great if patient needs immediate assistance".
"Our hospital environment has not been conclusive for implementing this type of a program, but we certainly will be considering it in the future".
"All patients are sent to Calgary for both major and minor surgeries".
"Day surgery is offered at the municipal hospital across the road. We do not offer any surgery or obstetrical cases as we are not equipped for it nor is there the demand".

Note: Seven hospitals in Alberta who presently do not have a day surgery program stated that day surgery will be incorporated into their expansion programs or new facilities which are presently in the design or construction stages.

## APPENDIX H

## PHYSICIAN SURVEY

The number in parentheses following the comment indicates the number of respondents who made similar remarks.

**Urologists**

General Comments:

"We have been trying for several years to establish a "day care" for minor procedures. Resistance is mainly, 1) anaesthetists, and 2) inadequate space (hospital)"

"The best impetus to the day surgery programme is the nursing shortage".

"Again main problem is additional rules regarding cystoscopy. It continues to be harder to do day surgery despite more and more rules.

The concept of day surgery could be expanded for one or two days of hospital convalescence. This would significantly increase the number of procedures that could easily be done on this basis".

"Day surgery will spare many hospital beds for more serious cases".

"The present facilities here are inadequate for the needs of the community".

"In favour of day surgery as it applies to urology. This method of treatment should be used wherever possible rather than through hospital admission".

"Doing more and more outpatient cases because of bed pressures but it does not necessarily reflect the BEST medical management".

"Strong proponent of day surgery limited chiefly by a lack of programming to leave patients confident of their return home. Also it promotes surgical incident ie, through hemostasis when a surgeon treats home patients".

**Anaesthetists**

(I) General comments:

"Greatest advance in surgery of the second half of the 20th century. It should be available in all hospitals in Canada depending on the experience and willingness of the physicians in a day care program".

"I am fully in support of maximal use of day surgery".

"I have been favourably impressed by my own experience in giving anaesthetics in outpatient and day surgery facilities and also by reports from other centres".

"More use should be made of day care facilities. Administrative logistics seem to prevent a more widespread use of day care surgery. Every effort should be made to encourage use of day care surgery"(2).

"Alberta's use day care is poor compared to other provinces".

"Much more convenient for doctors and patients".
"The more outpatient surgery that is done, the better and the sooner the better. Makes sense to shift much of the responsibility back to the community".
"A very useful means of better utilization of hospital beds provided there is strict observance of the rules that are laid down as far as the medical state of patients is concerned, and anaesthetists must be well versed in techniques that allow rapid recovery and less post-anaesthetic hang over".
"In hospitals of 100 or fewer beds, a special ward could be set aside for admittance and post-operative supervision. Staffing could be done by the local pool of nurses who do not wish to work full time and who could be trained to do this type of supervision. This would result in minimum disruption of the permanent staff".
"Day surgery is mainly a cooperation of anaesthetists who should accept the nature of the procedures and who should be very agreeable to accepting the responsibilities. Whether the Canadian Medical Protective Association would accept such day surgery coverage, it should be clearly clarified(as with the hospital board. More recent techniques of anaesthesia, such as the newer narcotic and similar development in the future, will encourage day surgery". Experienced staff of the regular OR and PARR teams necessary".
As an anaesthesiologist I believe in pre-medication and consequently my anesthesia for these particular patients may render them more drowsy and their stay in hospital consequently is slightly longer".
"In 1980, this hospital (in Calgary) had 12 surgical day care beds; in 1981 it has 6 and may lose these soon, due to a lack of beds* for inpatients. Because of this the OR is only working at 60% capacity and a staff anaesthetist who is leaving is not being replaced. *obstetric, medical, chronic surgical patients".
"The purpose of outpatient surgery is to save money for the paying agency (Government) and to save time for the patient; therefore, patient safety must, in no way, be compromised".

(II) Criteria for Patient Selection:
"Careful selection of patients for day surgery is mandatory, and if the anaesthetist does not agree with the selection on each occasion then he should refuse to accept the case as a day surgery patient. The anaesthetists, the surgeons, and the hospital involved should agree beforehand and set down a firm policy as to conditions to be followed, and there should be few (if any) exceptions made".
"Usually more important is the choice of patients (i.e. ASA I or II anaesthetic risk) rather than the procedure involved".
"Anaesthetist assesses the patient for day surgery not the referring physician (he does not finally make the surgeon's choice for him)".

"No surgical procedure should be done which requires professional observation or professional home care unless such professional care is to be provided for at home".
"I think that day care success depends on meticulous care in selecting appropriate patients and surgical procedures".
"Require standardized medical criteria suitable for outpatient surgery".
"All patients must be healthy".
"The surgical procedures have to be those which are simple enough to permit the patient to walk home and to have a relatively small chance of severe pain or post-operative bleeding or other complications".
"For minor surgery only".
"Always remember there maybe minor surgery but there is no minor anaesthetics".
"Acceptable patients should be those in physical status i.e. ASA I (as used by American and Canadian Anaesthetists Societies). ASA II types could be accepted provided that the patient's disease entity would not be affected by the anaesthetic".
"Decision to do a procedure should be based on the nature of the procedure, duration of anaesthetic, and the patients' overall health condition".
"Classified as an ASA I to a mild ASA II, the latter being care fully screened by the physician and the anaesthetist".
"Age for day surgery 6 months to 65 years".
"Age for day surgery 2 years to age 65".

(III) Pre-operative and Post-operative Service:
"The patient should have a recent written history and exam, with urinalysis and hemoglobin. In addition, the surgery should be postponed if there is any indication of any acute illness developing. An information sheet with all of the instructions and rules should be explained to the patient, and given to him or her to take home with orders to follow every instruction. On the day of surgery, the patient should sign a sheet stating that all items have been carried out. Failure to follow the instructions should result in refusal to accept the patient on this occasion. This results (sometimes) in resentment by the patient or surgeon, but it is necessary to maintain a very high standard of selection and preparation (soon all concerned parties learn to "toe the line" and take proper care). Every detailed item on the instruction sheet should be gone over with the patient (or the parent or adult in charge) before the patient is sent to the OR"(3).
"Need special facilities for pre-anaesthetic assessment 1 to 2 days prior to operation".
"Need documentation of patient's past and present medical history"(3).
"Provision must be made for the anaesthesiologist to assess the patient prior to arrival in the OR"(2).
"All relevant investigation and lab reports must be on the patient's chart prior to surgery".

"Anaesthesia pre-op clinic preferable".
"Pre-op screening is essentail".
"lab investigation". (7)
"Rigid patient instruction pre-operatively".
"Provision must be made for inpatients beds to be available for admission"(2).
"Out of town outpatients should have arrangements to stay overnight in the city, either their own arrangements or "hostel facilities" with some medical supervision "(3).
"It should be possible to change the patient's status to that of an inpatient if intra or post-operative events require this (experience shows this to be necessary in less than 5% of cases)"(3).
"The surgeon and the anaesthetist should sign a release that the patient is fit to be taken home".
"Some responsible adult must accompany patient home".
"Rigid patients instruction and post operative"(2).

(IV) Day Surgery Unit and Staff Requirements:
"We definitely do not need a personal private department for day surgery. This is my feeling because you will spend more capital. Also, it is more aggravating due to the increase in bureaucratic processes".
"What's needed is physicians who are confident in their specialties, good well trained nursing staff, good facilities including equipment, and very careful patient selection".
"Personnel should be fully trained and equipment for resusitation should be available as is in hospitals".
"Facilities should provide the same level of care as inpatient facilities in terms of equipment and resuscitative equipment".
"Need staffing: more persons of same qualifications and experience as inpatient".
"Qualified anaesthetic staff and good recovery room facilities".

(V) The Location Of Day Surgery Units:
"Hospital affiliation is a must from the anaesthetic point of view".
"Day care surgery should be confined to hospital controlled areas".
"Day surgery should be increased in major active treatment hospitals within the limits of good patient care".
"I believe there is a place for day surgery for relatively straightforward, commonplace, and generally uncomplicated types of surgery which do not require the full-blown facilities of modern hospitals".
"Privately operated surgicentres provide quality care to patients at approximately 60% of the cost of the same service in the day care department of hospitals. The patient, however, has to bear these costs although they would be paid on his behalf of AHIP if they were provided in hospital".

"Free-standing surgi-centres have to charge the patient extra fees to cover overhead, nursing, etc. If this could be subsidized these surgicentres would be busy 100% of the time".
"Facilities must be set up with strict criteria which must be rigidly adhered to".
"If you remove these cases from active treatment hospital then it means less work for the hospital based anaesthetists. Surgicentres affect the anaethetists in the active hospitals i.e., lack of work in hospitals for anaethetists because of lack of day cases".

(VI) Concerns:
"There is a danger at present that the system will be abused because of the shortage of hospital beds. What happens, in effect, is pressure upon the operating surgeon who cannot get the patient in as an inpatient. He then books him in as a day service case whereupon we find that he/she has hypertension, an enlarged liver, and an uninvestigated diabetes millitus. It might be better to get the present facilites back into working order before implementing any new grandirose schemes".
"AT present many surgeons book patients who are not healthy - diabetic, previous heart disease, hypertension, on potent drugs, etc. Many surgeons seem to be unaware of the effect of general anaesthetics and even local anaesthetics on patients with imperfect health".
"Anaesthetists and surgeons (not actively involved) have no concept of the problems involved and morbidity and mortality from day surgery".
"In anaesthesia there appears to be little attention paid to the qualifications, the abiltiy, or the records of work done by anaesthetists. This may apply to surgeons as well".
"Increased utilization of outpatient surgery should occur as the demand for medical services exceeds what is presently available, or will be available in the future. I do not feel it is appropriate to do those procedures which require anything more than minimal nursing care on an outpatient basis".
"In principle, nobody can deny that day surgery has many advantages over inhospital surgery. However, I am not aware that a survey has been done, although one may have been, which would indicate that the day care patient is as safe as the hospitalized patient".
"I was with the Department of Anaesthesia at the University Hospital for nineteen years and prior to that gave many anaesthetics in England. It was my opinion that the emergency and "off the street" patient was a much higher risk than the settled inpatient. One reason is that inhospital patients tend to comply with the rules; outpatients in my personal experience come in with full stomachs, which is a potential cause of death under anaesthesia. Simple things can easily be missed because the patient does not tell you, and there is a natural tendency

to "push things through" when the patient is sitting or lying there all ready for surgery".
"As I say, it has great advantages particularly in costs, but there is a hidden price that must be paid and this must be clearly recognized".
"Patients should be free to have either inpatient or day surgery without coercion by either the surgeon or the hospital administration through the reduction of the number of available surgical beds. Anaesthesia with absent or reduced pre-operative medication is less satisfactory. Trying to regulate the anaesthetic with a view to the patient returning home the same day detracts from the main purpose of anaesthesia, safety, good operating condtions for the surgeon, and comfort for the patient".
"The present facilities in some centres are too small, inadequately staffed (nursing, etc), and depressing.

(VII) Economic Savings:
"Day care is occasionally benefical to the patient but is mainly necessary because of the financial implications of inpatient hospitalization".
"Day surgery should decrease the cost to the government i.e., hospital bed, nursing duties, meals; etc".
"At my hospital a large numbers of patients are admitted for a two day stay, when they are eminently suitable for day surgery for the only reason that there are not enough day care beds. This is a ridiculous waste of money".
"Day surgery must be the most cost effective method for minor surgical procedures and many patients who are now done over a two to three day stay can easily be done as day surgery patients".
"I believe that day surgery facilities should be greatly increased for selected patients, of course, in order to provide more inpatient beds for more serious surgery".
"If the provincial government can fund day surgery centres to take the load off of the hospital, then the government should be able to save a lot of money".
"Much less administrative costs for patient care".
"Day surgery can be a real cost saver to the government but politicians must realistically fund it so that other hospital based services do not subsidize day surgery".
"Hospital based day surgical units must be organized so that they are separate and do not compete for the resources and personnel of regular surgical (inpatient)units.
"The chief source of demand for day surgery over the next five years may well come from government, and for financial reasons rather than from reasons related to the provision of high quality medical care. The provision of the day surgery option would be excellent, but let the patient and the physician together decide which route provides the best care".
"One of the great advances in medical care has been the provision of an adequate number of surgical beds so that day surgery would not be necessary".

"More recently, because of the high cost of hospital care to either the patients (U.S.) directly or to the government, the number of available beds is being reduced. Almost every paper of day surgery about five or ten years ago began with the phrase "Faced with an acute shortage of surgical beds...".
"Day surgery is safe and adequate for many, but it should not be promoted as a great advance at the expense an adequate number of surgical inpatient beds".
"The hospital stay could be shortened by admitting patients on the day of surgery. It is a question of organization and a real desire to reduce bed usage".

General Surgeons
(I) General Comment:
"The ability to utilize day surgery varies with one's practice".
"General surgery has low utilization due to requirements of post-operative care in hospitals for most abdominal and head and neck operations".
"A very valuable service to be able to provide especially if bed occupancy is very high".
"No exposure to inhospital infections".
"Better for children; accepts surgery better if told he/she is going home post-op"(2).
"Like the idea of surgicentres; if adequately equipped".
"A separate trained nursing staff specifically employed for the day care unit".
"The surgical and anaesthesia facilities have to be as good as in the main operating suite".
Day Surgery should be encouraged as it saves hospital beds and is more economical(2)".
"At present, government does not recognize services as separate from the "Universal Hospital Budget". Should make provisions (bonuses) for increasing outpatient services which keep patients out of hospitals".
"The whole thing is political but our government is not honest enough to admit it. One half of the patients in hospital at present time do not need to be in hospital or should be elsewhere - e.g. nursing home. The problems for getting day cases in are chaotic".
"Day surgery would be a help in providing service to patients and reducing some pressure for beds. It will cost a lot and I am not entirely sure it will be cost effective (i.e. home care vs. institutional care)".
"More cases are suitable for day surgery but facilities are limited".
"An excellent facility for many patients undergoing many operative procedures".
"Using day care surgery facilities to a maximum at present. Adult patients prefer to be hospitalized".
"Since the surgeon would have to work harder and would have higher expenses, more telephone calls, night calls, more office visits, more dressing changes, more home calls, and

more worry he/she should be compensated by being paid substantially higher fees as compared to cases operated on an inpatient basis".
"Breast biopsy is an outstanding example where day surgery could drastically reduce bed/stay figures".
"It is a nice refinement in service if people are willing to pay straight from their own pocket. It is not lifesaving and therefore should not be paid by the tax payer".

(II) Criteria for Patient Selection:
"Day surgery is a much underutilized facility but too rigid guidelines are not desireable either. No patients can clearly be classified to a given category but greater emphasis on day surgery where possible is highly desireable".
"If general anaesthesia is used, most anaesthetists will not administer anaesthetics to over age 65 diabetics, post coronary patients, alcoholics, hypertensives".
"Day surgery is for healthy patients with smaller clear cut problems".
"I believe day surgery will prove to be a useful and entirely appropriate way of dealing with many surgical cases but it should not become the "in thing" to be tried across the board".
"Sooner or later someone will suggest that some very major procedure may be suitable for day surgery, merely because personal experience has been fortuitously quite free of serious post-operative problems".
"As many as 25 to 30% of procedures I do could be done as outpatient day surgery cases; breast biopsy, simple vein ligation, some hernias on adults, and most hernias on children".
"The inclusion of hernias, hemerrhoids, and appendix operations as day surgery is a bad mistake".

(III) Pre-operative and Post-operative Services:
"Proper pre-operative patient education and information leaflet to minimize post-operative problems".
"Day surgery requires: (1) good lab assessment, (2) clinical assessment, and (3) anaesthetic assessment".
"Majority of post-op concern on the part of the patient or relative is due to lack of communications".
"Proper written and verbal instruction at the time of discharge"
"Of course one must have a cooperative and understanding anaesthetist who will examine the patient from his view point and not leave that to the family physician with a little piece of paper, as often is the case with dental procedures in Edmonton".
"Patient education and cooperation are necessary".
"Adequate 24 hour follow-up is necessary by the operator or his stand-in".
"Alternative arrangements must be present to admit the patient to the hospital. Intolerable pain, malignancy, or

excessive bleeding are indications for admission".
"I have been using day care surgery for many years with a minimum requirement for readmission or phone calls. I did have one death in a day care patient a week post-operative from sleep apnea. The relationship is difficult to establish but suggests to me that children under 9 months are rarely suitable candidates".
"The home care facilities must be adequate to ensure safety".

**Pediatricians**
General Comments:
"I believe the prolonged waiting time for hospitalization of surgical patients could be relieved if there were enough facilities for day care surgery".
"We are introducing and developing day surgery at the newly constructed Alberta Children's Hospital in Calgary. So far, although only in its embryonic stages, it seems to be working well".
"Home care or nursing services required in conjunction with a day surgery program should be organized by an expansion of existing domiciliary services through health units rather than the creation of another species of home visitors".
"More VON type of nurse available for home care".
"Close liason with pediatricians needed to safely run day surgery for children".
"Day surgery has been a long awaited service in this province".
"Especially in dealing with children, day surgery would decrease so much the anxiety that many parents go through when their children need surgery".
"Day care surgery may not need separate facilities but a designated time in facilities presently available i.e., most day care is selective surgery therefore, every Wednesday would be day care".

**Gynecologists**
General Comments:
"We are now organizing day care facilities in our Hospital. The important point is developing a policy (criteria, procedures, etc)".
"Gynecological day surgery should be confined to certified specialists".
"I do not agree with licensing surgical suites in office buildings or general anaesthesia in dental offices. If you check the anaesthetists in the latter you will find they have been eased out of hospitals for various reasons (most of them). I think all general anaesthesia should be hospital based; can be done in a day care section".
"Presently, with no real established program, approximately 30% of our surgery is day surgery, 50% of which is under general anaesthetic".
"The number of day surgery beds should be increased in all hospitals instead, as in many, they have been decreased".

"Distance factor: it is undesirable if patient has to travel too great a distance e.g., 60 miles return".
"More emphasis and training on day surgery cases under local anesthesia".
"Some arrangements have to be made to keep cases that become more involved or complicated overnight".
"This is a cost effective, safe way of providing consumers with acceptable medical services providing there are adequate community based nursing services , surgical techniques, and the anaesthesia is tailored to suit the needs".
"Units must be planned by people who know, understand, and use the facilities with equal input from physicians and paramedical staff who know and understnad the principles".
"The day patient is one who requires a service with morbidity low enough that they can walk and be comfortable and free from complications or risks from the procedure done. Much is at the discretion of the surgeon. I believe day service is an excellent approach to a more efficient delivery of health care. Certainly the traditional "inpatient mode" is too expensive and inefficient".
"Was held up for years by government refusal to fund for day surgery".
"Waiting periods for day surgery is 3 to 6 months".
"Day surgery saves money".
"All hospitals that perform surgery should provide day surgery; even smaller country hospitals".
"We have a successful day surgery program in place. All our D&C, laparoscopies, cystoscopies, and minor vulvar procedures are done as day surgery patients.

Orthopaedic Surgeons
General Comments:
"Requires a very efficient pre-operative medical assessment by anaesthestists and its owns geographic location within the hospital".
"Hospital beds are full at present, and no beds are available for day care. OR space is limited and barely handles inpatients. Hence, day care has a lower priority than inpatient. The result in our hospital is that day care is not done; these cases are not being booked, and not being done. If I did day care, I could do 10cases/month but at the expense of 10 inpatients which have a higher priority".
"Doctor time and paper work to arrange day surgery is excessive and falls on his nurse's time instead of hospital admission and is a deterrent at present".
"Anaesthetists are not happy doing cases with any risk and hesitant to do patients over 50 years of age".
"Doctors can avoid much time consuming paperwork and rounds".
"Certainly we could make much greater use of this facility".
"Don't make it complicated with so called post-operative nursing services. The doctor must decide if the patient is smart enough to follow instructions post operatively".

"In orthopaedic surgery; orthroscopy and operative arthroscopy should be promoted. This probability would result in the greatest shiftfrom inpatient to day care surgery (in orthopaedics)".
"Day surgery requires good facilites, as good as inpatient facilities. Also must have personnel to run it".
"Many patients would accept the slightly increased risk and extra demands on their family if admission to day surgery could be obtained more quickly or at convenient times".

Ophthalmologists
General Comments:
"Some old patients admitted into hospital have trouble getting back home; the family is apparently too busy to receive them back!".
"It is likely that new techniques will allow a large percentage of cataracts to be done as out-patient".
"Children under 2 years should not undergo day surgery except for minor procedures".
"Pre-op day surgery forms should be made as simple as possible and be able to be filled by the patient's family practitioner. A routine CBC and urine analysis should not be "out of date" if its's only a month or so prior to surgery. (Some hospitals insist on repeat CBC and urine if the tests are over a week old)".
"There is no doubt that day surgery merely reduces waiting time for hospital beds. It increases physician work due to scheduling time for seeing these patients and will also increase the level of anxiety of family members who will be forced to look after their relations".
"You have not mentioned day care cataract surgery. This can be done safely with phako-emulsification techniques both with and without lens implantation".
"The surgical fee should be ONLY for the surgical procedure and not for pre and post operative care. These visits should be paid on a per visit basis in addition to the fee. There should be other dressing tray codes to pay for dressing charges and medications used in office follow-up. There should be payment for services rendered on an emergent basis if there are complications or visits required".
"Day surgery is a means of economy, not a means of better patient care. One night in hospital after any surgery is a reassurance to patient and nurses and doctors. Surgicentres arise for same reason, and almost always involve privelege since patient bears a substantial cost for use of facilities. I suspect that economics is very influential in day surgery planning.

Plastic Surgeons
General Comments:
"I have been using private day care facilities for 10 years; patient acceptance is excellent, my time is considerably more efficiently spent compared to hospital doing similar work. A partical subsidy for day care facilities would

result in considerable increased use of private facilities and a large saving in hospital costs. Patients would be willing to pay a portion of the cost for the convenience".
"Potential need is difficult to assess. If surgical programs stressed more day care training, the volume of cases done in those facilities could increase dramatically at a lower public cost. Many surgeons will not use day care facilities particularly private facilities because of cost factor and ignorance of the patient cases".
"The government should fund private free standing day surgery centres".
"Another factor in determining whether a case in question is eligible for surgery on day care basis is the starting time of the particular surgery. If a surgeon's operating time is in the afternoon, he will have less of recovery time for the patient in the day surgery facility which closes at 5 or 6 p.m. (Hence, he may elect to do the surgery as an inpatient)".
"This is the only way we will relieve pressure on hospital beds. An adequate tray fee would promote more private facilities and better patient care".
"Much improvement in facilities is necessary and day surgery centre with or without hospital affiliates is very urgent if we are to keep costs of medical service down. Day surgery centres are very cost effective and are growing tremendously in the U.S.A.".
"Patient information brochures should be comprehensive and mandatory".

Otorhinolaryngologists
General Comments:
"I find the limiting factor in many cases is the feeling of the anaesthetist. Patients with risk of haemorrhage or air way problems should not be done as day care".
"I believe greater use could be made of day surgery with more nursing back up and post-operative home visiting".
"Rapid laboratory service for immediate pre-operative tests; minimal requirements for hemoglobin, white blood count and possibly urinalysis. To be provided in hospital where surgery takes place in hospital operating room".
"This should be encouraged within the bounds of safety, and that comes with experience. The responsibility is mostly the surgeons but I don't think he needs to be paid more: he benefits by "turning the trick" faster. But it is usually preferred by the patient and less expensive as a health care delivery mechanism. There may be an increased load on OPD/ER to cope with post-op complications".
"Opinions regarding day surgery varies widely among specialists in any one group. Some will never perform day surgery and therefore their opinions are not valid. A better evaluation might be obtained from patients who have undergone day surgery".
"For ENT day surgery is a definite money saver for the government".

"Greatly preferred by most patients, families, and myself as long as guaranteed admission to hospital on request for complications, or weather, etc".

Internists
General Comments:
"Diagnostic procedures which can be performed in a day surgery setting should not be delayed because of a shortage of inpatient beds, and inadequate day surgery services. It would be to the patients of Alberta's benefit to have better day surgery facilities".
"A step forward in decreasing total hospital costs".
"Day surgery will become a compulsory part of health care delivery as hospital beds become more difficult to obtain".
"Integrate the whole program into the existing hospital surgical potential; meaning bed, nursing, operating room, and surgeon supply".

General Practitioner
General Comments:
"Day surgery facilities should be available to all practicing physicians including those without admitting privileges".
"I don't think tonsillectomies should ever be done on a day surgery basis. Back up for day surgery cases should be available for 95% of surgical cases requiring a general anesthetic".
"Non-medical personnel must be full time in the day surgery area and should not be staffed on a "help if I can" basis from other departments e.g., emergency dept. etc.".
"As hospital beds become increasingly scarce, alternatives such as day surgery will receive widespread acceptance".
"I think all therapeutic abortions should be performed in a set-up like day surgery; admitting them to an active treatment hospital is neither cost effective nor appropriate".
"Day surgery centre will be ideal for a town where there is a general practitioner but no hospital so that for minor procedures the patients can be spared a trip to the hospital which may be in another town".
"Would alleviate the demand for OR's for elective abortions if free-standing clinics were established for this purpose; in the long run, it would be more economical".
"More instruction should be given to students interns and residents in day surgery possibilities. Also students should be encouraged to perform surgery. At present it seems they are told not to use a scalpel but reserve the scalpel for surgeons".
"Don't forget the general practitioners and emergency officers who have to provide post-operative services when asking government money for these programs.

APPENDIX I

Potential Day Surgery Load
(average number of cases x $10^3$ per year)

| Specialists | Operation Code H-ICDA | Method 1 | | Method 2 | | Method 3 (000) |
|---|---|---|---|---|---|---|
| | | LOS ≤ 2 (000) | LOS ≤ 3 (000) | Minimum (000) | Maximum (000) | |
| Urologists | 55.0 - 59.9 | 0.6 | 0.8 | 0.8 | 1.4 | |
| | 57.0 - 57.9 | | 0.1 | 0.2 | 0.4 | |
| | 58.0 - 58.9 | 0.5 | 0.6 | 0.5 | 0.8 | |
| General Surgeons | 1.0 - 90.9 | 46.2 | 61.6 | 17.4 | 36.3 | 42.8 |
| | 53.0 - 53.9 | 0.5 | 1.1 | 1.6 | 2.8 | |
| | 53.0 - 53.9 | 0.4 | 0.5 | 0.6 | 0.7 | |
| | 53.0 - 53.9 | 0.2 | 0.6 | 0.5 | 1.3 | |
| | 49.3 | | 0.1 | | 0.1 | |
| | 47.0 - 47.9 | 0.1 | 0.7 | | 0.1 | |
| Gynecologists | 65.0 - 71.9 | 15.1 | 17.9 | 7.2 | 13.5 | 13.5 |

(Cont'd)

(Appendix I, Cont'd)

| Specialists | Operation Code H-ICDA | Method 1 | | Method 2 | | Method 3 (000) |
|---|---|---|---|---|---|---|
| | | LOS ≤ 2 (000) | LOS ≤ 3 (000) | Minimum (000) | Maximum (000) | |
| | 69.0 | 9.0 | 9.9 | 9.1 | 10.3 | |
| | 69.1 | 2.8 | 3.0 | 2.8 | 3.1 | |
| Orthopaedic Surgeons | 76.0 - 85.9 | 5.7 | 8.1 | 2.6 | 4.9 | 1.6 |
| | 76.0 - 79.9 | 0.8 | 1.4 | 0.2 | 0.7 | |
| | 79.0 - 79.9 | 2.7 | 3.4 | 1.8 | 3.6 | |
| | 80.0 - 80.9 | 0.3 | 0.7 | 0.5 | 1.0 | |
| | 81.0 - 81.9 | 0.1 | 0.3 | 0.3 | 0.5 | |
| | 82.0 - 83.9 | 1.4 | 1.9 | 0.6 | 1.7 | |
| Otorhinolaryngologists | 18.0 - 30.9 | 14.2 | 18.4 | 5.6 | 11.4 | 9.6 |
| | 21.0 - 22.0 | 1.9 | 3.5 | 1.4 | 3.3 | |
| | 23.0 - 24.9 | 3.3 | 3.6 | 2.8 | 3.9 | |
| | 25.0 - 26.9 | 0.1 | 0.2 | 0.1 | 0.1 | |
| | 28.0 - 28.9 | 7.0 | 8.7 | 3.3 | 4.8 | |
| | 30.0 - 30.9, | 0.2 | 0.2 | 0.1 | 0.2 | |

(Cont'd)

(Appendix I, Cont'd)

| Specialists | Operation Code H-ICDA | Method 1 | | Method 2 | | Method 3 (000) |
|---|---|---|---|---|---|---|
| | | LOS ≤ 2 (000) | LOS ≤ 3 (000) | Minimum (000) | Maximum (000) | |
| | 31.0, 31.3, 31.6, & 31.9 | | | | | |
| Ophthalmologists | 8.0 - 17.9 | 1.4 | 1.8 | 1.6 | 2.7 | 0.6 |
| | 8.0 - 8.9 | 0.1 | 0.1 | 0.1 | 0.2 | |
| | 9.0 - 9.9 | 0.4 | 0.5 | 0.5 | 0.7 | |
| | 10.0 - 10.9 | 0.8 | 1.0 | 0.6 | 0.9 | |
| | 11.0 - 11.9 | | | 0.1 | 0.1 | |
| | 12.0 - 12.9 | 0.1 | 0.1 | | 0.1 | |
| All Physicians | all surgery operations (1.0 - 90.9) | 46.2 | 61.6 | 25.9 | 53.0 | 42.8 |
| | pediatric surgery (1.8 - 90.9) | 10.9 | 12.9 | 4.4 | 8.7 | |
| Pediatricians | pediatric surgery (1.0 - 90.9) | 10.9 | 12.9 | 5.7 | 9.1 | |

APPENDIX J

Physicians' Estimated Proportions (DSP)

| Specialists | Operation[1] Code H-ICDA | Minimum Estimates | | | Maximum Estimates | | |
|---|---|---|---|---|---|---|---|
| | | No. of Respondents | 1st Quartile value (%) | Median Value (%) | Median Value (%) | 3rd Quartile value (%) | No. of Respondents |
| Urologists | 55.0 - 59.9 | 18 | 12 | 20 | 35 | 50 | 16 |
| | 57.0 - 57.9 | 16 | 15 | 25 | 45 | 52 | 14 |
| | 58.0 - 58.9 | 16 | 23 | 35 | 58 | 80 | 14 |
| General Surgeons | 1.0 - 90.9 | 66 | 6 | 10 | 21 | 31 | 63 |
| | 53.0 - 53.9 | 30 | 9 | 29 | 51 | 80 | 30 |
| | 53.0 - 53.9[2] | 62 | 49 | 76 | 90 | 97 | 63 |
| | 53.0 - 53.9[3] | 61 | 4 | 11 | 27 | 51 | 61 |
| | 49.3 | 66 | 0 | 1 | 10 | 20 | 62 |
| | 47.0 - 47.9 | 66 | 0 | 0 | 2 | 7 | 63 |
| Gynecologists (Cont'd) | 65.0 - 71.9 | 53 | 13 | 22 | 42 | 66 | 53 |

(Appendix J, Cont'd)

| Specialists | Operation[1] Code H-ICDA | Minimum Estimates | | | Maximum Estimates | | |
|---|---|---|---|---|---|---|---|
| | | No. of Respondents | 1st Quartile value (%) | Median Value (%) | Median Value (%) | 3rd Quartile value (%) | No. of Respondents |
| | 69.0 | 53 | 59 | 80 | 90 | 99 | 56 |
| | 69.1 | 42 | 52 | 88 | 98 | 99 | 45 |
| Orthopaedic Surgeons | 76.0 - 85.9 | 30 | 6 | 11 | 21 | 27 | 30 |
| | 76.0 - 78.9 | 23 | 5 | 5 | 16 | 24 | 23 |
| | 79.0 - 79.9 | 29 | 12 | 26 | 51 | 69 | 30 |
| | 80.0 - 80.9 | 29 | 5 | 10 | 19 | 42 | 29 |
| | 81.0 - 81.9 | 24 | 3 | 10 | 18 | 35 | 24 |
| | 82.0 - 83.9 | 29 | 10 | 17 | 32 | 50 | 30 |
| Otorhinolaryngologists | 18.0 - 30.9 | 15 | 18 | 25 | 51 | 64 | 15 |
| | 21.0 - 22.9 | 15 | 21 | 30 | 70 | 81 | 15 |
| | 23.0 - 24.9 | 8 | 50 | 65 | 91 | 93 | 8 |
| | 25.0 - 26.9 | 14 | 8 | 15 | 25 | 50 | 14 |

(Cont'd)

(Appendix J, Cont'd)

| Specialists | Operation[1] Code H-ICDA | Minimum Estimates | | | Maximum Estimates | | |
|---|---|---|---|---|---|---|---|
| | | No. of Respondents | 1st Quartile value (%) | Median Value (%) | Median Value (%) | 3rd Quartile value (%) | No. of Respondents |
| | 28.0 - 28.9 | 14 | 1 | 35 | 51 | 97 | 13 |
| | 30.0 - 30.9, 31.0, 31.3, 31.6 & 31.9 | 14 | 11 | 25 | 50 | 69 | 15 |
| Opthalmologists | 8.0 - 17.9 | 30 | 12 | 31 | 51 | 78 | 27 |
| | 8.0 - 8.9 | 32 | 15 | 35 | 68 | 79 | 29 |
| | 9.0 - 9.9 | 32 | 48 | 59 | 89 | 98 | 30 |
| | 10.0 - 10.9 | 33 | 30 | 60 | 89 | 98 | 31 |
| | 11.0 - 11.9 | 32 | 68 | 85 | 98 | 99 | 29 |
| | 12.0 - 12.9 | 29 | 5 | 10 | 29 | 50 | 27 |
| Plastic Surgeons[4] (Cont'd) | All P.S. | 16 | 28 | 33 | 60 | 75 | 15 |

(Appendix J, Cont'd)

| Specialists | Operation[1] Code H-ICDA | Minimum Estimates | | | Maximum Estimates | | |
|---|---|---|---|---|---|---|---|
| | | No. of Respondents | 1st Quartile value (%) | Median Value (%) | Median Value (%) | 3rd Quartile value (%) | No. of Respondents |
| | P.S. (Musculo-skeletal) | 14 | 25 | 49 | 69 | 76 | 14 |
| | P.S. (skin) | 16 | 50 | 60 | 88 | 91 | 15 |
| | P.S. (Breast) | 16 | 35 | 49 | 73 | 77 | 15 |
| All Physicians | All surgery operations (1.0 - 90.9) | 254 | 10 | 15 | 30 | 50 | 253 |
| | Pediatric surgery (1.0 - 90.9) | 221 | 10 | 25 | 50 | 70 | 219 |
| | Diagnostic operations (91.0 - 99.9) | 224 | 31 | 51 | 80 | 90 | 221 |
| Pediatricians | Pediatric surgery (1.0 - 90.9) | 28 | 15 | 33 | 52 | 69 | 27 |

(Cont'd)

(Appendix J, Cont'd)

[1]For the description of the particular operation category, please refer to sample questionnaire, section D in Appendix H.

[2]Children under 15 years of age.

[3]Adults over 14 years of age.

[4]No specific H-ICDA operation code available.

APPENDIX K

Potential Impact of Day Surgery on
Savings of Patient-Days Per Year ($10^3$)

| Specialists | Operation[1] Code H-ICDA | Method 1 | | Method 2 | | Method 3 (000) |
|---|---|---|---|---|---|---|
| | | LOS ≤ 2 (000) | LOS ≤ 3 (000) | Minimum (000) | Maximum (000) | |
| Urologists | 55.0 - 59.9 | 0.8 | 1.5 | 1.4 | 4.3 | |
| | 57.0 - 57.9 | 0.1 | 0.2 | 0.8 | | |
| | 58.0 - 58.9 | 0.6 | 1.0 | 0.7 | 2.0 | |
| General Surgeons | 1.0 - 90.9 | 72.8 | 119.0 | 17.4 | 53.1 | 66.1 |
| | 53.0 - 53.9 | 0.9 | 2.7 | 4.5 | 10.6 | |
| | 53.0 - 53.9[2] | 0.6 | 1.2 | 1.3 | 1.8 | |
| | 53.0 - 53.9[3] | 0.3 | 3.8 | 1.3 | 4.2 | |
| | 49.3 | | 0.2 | | 1.9 | |
| | 47.0 - 47.9 | 0.2 | 1.9 | | 0.1 | |
| Gynecologists | 65.0 - 71.9 | 22.2 | 30.7 | 7.2 | 19.7 | 19.0 |

(Cont'd)

(Appendix K, Cont'd)

| Specialist | Operation[1] Code H-ICDA | Method 1 | | Method 2 | | Method 3 (000) |
|---|---|---|---|---|---|---|
| | | LOS ≤ 2 (000) | LOS ≤ 3 (000) | Minimum (000) | Maximum (000) | |
| | 69.0 | 8.5 | 15.6 | 13.2 | 17.2 | |
| | 69.1 | 3.7 | 4.2 | 3.6 | 4.8 | |
| Orthopaedic Surgeons | 76.0 - 85.9 | 8.5 | 15.6 | 2.6 | 6.9 | 1.6 |
| | 76.0 - 78.9 | 1.3 | 2.9 | 0.2 | 1.0 | |
| | 79.0 - 79.9 | 3.8 | 5.7 | 2.1 | 6.9 | |
| | 80.0 - 80.9 | 0.5 | 1.8 | 1.1 | 2.8 | |
| | 81.0 - 81.9 | 0.2 | 0.9 | 0.6 | 1.5 | |
| | 82.0 - 83.9 | 2.1 | 3.5 | 0.6 | 2.9 | |
| Otorhinolaryngologists | 18.0 - 30.9 | 24.9 | 37.6 | 7.6 | 19.3 | 15.6 |
| | 21.0 - 22.9 | 3.0 | 7.9 | 2.0 | 7.1 | |
| | 23.0 - 24.9 | 5.1 | 5.9 | 4.0 | 7.6 | |
| | 25.0 - 26.9 | 0.2 | 0.3 | 0.1 | 0.2 | |
| | 28.0 - 28.9 | 13.6 | 18.8 | 6.2 | 9.3 | |

(Cont'd)

(Appendix K, Cont'd)

| Specialists | Operation[1] Code H-ICDA | Method 1 | | Method 2 | | Method 3 (000) |
|---|---|---|---|---|---|---|
| | | LOS ≤ 2 (000) | LOS ≤ 3 (000) | Minimum (000) | Maximum (000) | |
| | 30.9 - 30.9, 31.0, 31.3, 31.6 & 31.9 | 0.3 | 0.3 | 0.1 | 0.2 | |
| Opthalmologists | 8.0 - 17.9 | 2.4 | 3.5 | 3.0 | 8.8 | 0.6 |
| | 8.0 - 8.9 | 0.1 | 0.2 | 0.2 | | |
| | 9.0 - 9.9 | 0.5 | 0.8 | 0.9 | | |
| | 10.0 - 10.9 | 1.3 | 1.8 | 1.2 | 1.9 | |
| | 11.0 - 11.9 | | 0.1 | 0.1 | | |
| | 12.0 - 12.9 | 0.1 | 0.2 | | 0.1 | |
| All Physicians | All surgery operations (1.0 - 90.9) | 72.8 | 119.0 | 32.2 | 93.2 | 66.1 |
| (Cont'd) | Pediatric surgery (1.0 - 90.9) | 19.0 | 24.9 | 5.9 | 14.5 | |

(Appendix K, Cont'd)

| Specialists | Operation[1] Code H-ICDA | Method 1 | | Method 2 | | Method 3 (000) |
|---|---|---|---|---|---|---|
| | | LOS ≤ 2 (000) | LOS ≤ 3 (000) | Minimum (000) | Maximum (000) | |
| Pediatricians | Pediatric surgery (1.0 - 90.9) | 19.0 | 24.9 | 8.5 | 15.4 | |

[1]Please refer to section D [illegible] physician questionnaire in Appendix H for a description of the operation categories.

[2]Children under 15 years of age.

[3]Adults over 14 years of age.